SIERRA CLUB BULLETIN.

VOL. VI. SAN FRANCISCO, JANUARY, 1908. No. 4.

THE HETCH-HETCHY VALLEY

BY JOHN MUIR.

It is impossible to overestimate the value of wild mountains and mountain temples as places for people to grow in, recreation grounds for soul and body. They are the greatest of our natural resources, God's best gifts, but none, however high and holy, is beyond reach of the spoiler. In these ravaging money-mad days monopolizing San Francisco capitalists are now doing their best to destroy the Yosemite Park, the most wonderful of all our great mountain national parks. Beginning on the Tuolumne side, they are trying with a lot of sinful ingenuity to get the Government's permission to dam and destroy the Hetch-Hetchy Valley for a reservoir, simply that comparatively private gain may be made out of universal public loss, while of course the Sierra Club is doing all it can to save the valley. The Honorable Secretary of the Interior has not yet announced his decision in the case, but in all that has come and gone nothing discouraging is yet in sight on our side of the fight.

As long as the busy public in general knew little or nothing about the Hetch-Hetchy Valley, the few cunning drivers of the damming scheme, working in darkness like moles in a low-lying meadow, seemed confident of success; but when light was turned on and the truth became manifest that next to Yosemite, Hetch-Hetchy is the most wonderful and most important feature of the great park, that damming it would destroy it, render it inaccessible, and block the way through the wonderful Tuolumne Cañon to the grand central campground in the upper Tuolumne Valley, thousands from near and

Copyright, 1908, Sierra Club.

far came to our help,—mountaineers, nature-lovers, naturalists. Most of our thousand club members wrote to the President or Secretary protesting against the destructive reservoir scheme while other sources of city water as pure or purer than the Hetch-Hetchy were available; so also did the Oregon and Washington mountaineering clubs and the Appalachian of Boston and public-spirited citizens everywhere. And the President, recognizing the need of beauty as well as bread and water in the life of the nation, far from favoring the destruction of any of our country's natural wonder parks and temples, is trying amid a host of other cares to save them all. Within a very short time he has saved the petrified forests of Arizona and the Grand Cañon, and in our own State the jagged peaks of San Benito county known as "The Pinnacles," making them national monuments or parks to be preserved for the people forever. None, therefore, need doubt that everything possible will be done to save Hetch-Hetchy.

After my first visit, in the autumn of 1871, I have always called it the Tuolumne Yosemite, for it is a wonderfully exact counterpart of the great Yosemite, not only in its crystal river and sublime rocks and waterfalls, but in the gardens, groves, and meadows of its flowery park-like floor. The floor of Yosemite is about 4,000 feet above the sea, the Hetch-Hetchy floor about 3,700; the walls of both are of gray granite, rise abruptly out of the flowery grass and groves, are sculptured in the same style, and in both every rock is a glacial monument.

Standing boldly out from the south wall is a strikingly picturesque rock called "Kolana" by the Indians, the outermost of a group 2,300 feet high corresponding with the Cathedral Rocks of Yosemite both in relative position and form. On the opposite side of the valley facing Kolana there is a counterpart of the El Capitan of Yosemite rising sheer and plain to a height of 1,800 feet, and over its massive brow flows a stream which makes the most graceful fall I have ever seen. From

the edge of the cliff it is perfectly free in the air for a thousand feet, then breaks up into a ragged sheet of cascades among the boulders of an earthquake talus. It is in all its glory in June, when the snow is melting fast, but fades and vanishes toward the end of summer. The only fall I know with which it may fairly be compared is the Yosemite Bridal Veil; but it excels even that favorite fall both in height and fineness of fairy airy beauty and behavior. Lowlanders are apt to suppose that mountain streams in their wild career over cliffs lose control of themselves and tumble in a noisy chaos of mist and spray. On the contrary, on no part of their travels are they more harmonious and self-controlled. Imagine yourself in Hetch-Hetchy on a sunny day in June, standing waist-deep in grass and flowers (as I have oftentimes stood), while the great pines sway dreamily with scarce perceptible motion. Looking northward across the valley you see a plain gray granite cliff rising abruptly out of the gardens and groves to a height of 1,800 feet, and in front of it Tueeulala's silvery scarf burning with irised sun-fire in every fiber. In the first white outburst of the stream at the head of the fall there is abundance of visible energy, but it is speedily hushed and concealed in divine repose; and its tranquil progress to the base of the cliff is like that of downy feathers in a still room. Now observe the fineness and marvelous distinctness of the various sun-illumined fabrics into which the water is woven: they sift and float from form to form down the face of that grand gray rock in so leisurely and unconfused a manner that you can examine their texture, and patterns, and tones of color as you would a piece of embroidery held in the hand. Near the head of the fall you see groups of booming comet-like masses, their solid white heads separate, their tails like combed silk interlacing among delicate shadows, ever forming and dissolving, worn out by friction in their rush through the air. Most of these vanish a few hundred feet below

the summit, changing to the varied forms of cloudlike drapery. Near the bottom the width of the fall has increased from about twenty-five to a hundred feet. Here it is composed of yet finer tissues, and is still without a trace of disorder—air, water, and sunlight woven into stuff that spirits might wear.

So fine a fall might well seem sufficient to glorify any valley; but here as in Yosemite Nature seems in no wise moderate, for a short distance to the eastward of Tueeulala booms and thunders the great Hetch-Hetchy fall, Wapama, so near that you have both of them in full view from the same standpoint. It is the counterpart of the Yosemite Fall, but has a much greater volume of water, is about 1,700 feet in height, and appears to be nearly vertical though considerably inclined, and is dashed into huge outbounding bosses of foam on the projecting shelves and knobs of its jagged gorge. No two falls could be more unlike—Tueeulala out in the open sunshine descending like thistledown; Wapama in a jagged shadowy gorge roaring and thundering, pounding its way with the weight and energy of an avalanche. Besides this glorious pair there is a broad massive fall on the main river a short distance above the head of the valley. Its position is something like that of the Vernal in Yosemite, and its roar as it plunges into a surging trout-pool may be heard a long way, though it is only about twenty feet high. There is also a chain of magnificent cascades at the head of the valley on a stream that comes in from the northeast, mostly silvery plumes, like the one between the Vernal and Nevada falls of Yosemite, half-sliding, half-leaping on bare glacier-polished granite, covered with crisp clashing spray into which the sunbeams pour with glorious effect. And besides all these a few small streams come over the walls here and there, leaping from ledge to ledge with birdlike song and watering many a hidden cliff-garden and fernery, but they are too unshowy to be noticed in so grand a place.

The correspondence between the Hetch-Hetchy walls in their trends, sculpture, physical structure, and general arrangement of the main rock-masses has excited the wondering admiration of every observer. We have seen that the El Capitan and Cathedral Rocks occupy the same relative positions in both valleys, so also do their Yosemite Points and North Domes. Again that part of Yosemite Fall has two horizontal benches timbered with the Yosemite north wall immediately to the east of the gold-cup oak at about 500 and 1,500 feet above the floor. Two benches similarly situated and timbered occur on the same relative portion of the Hetch-Hetchy north wall, to the east of Wapama Fall, and on no other. The Yosemite is bounded at the head by the great Half Dome. Hetch-Hetchy is bounded in the same way, though its head rock is far less wonderful and sublime in form.

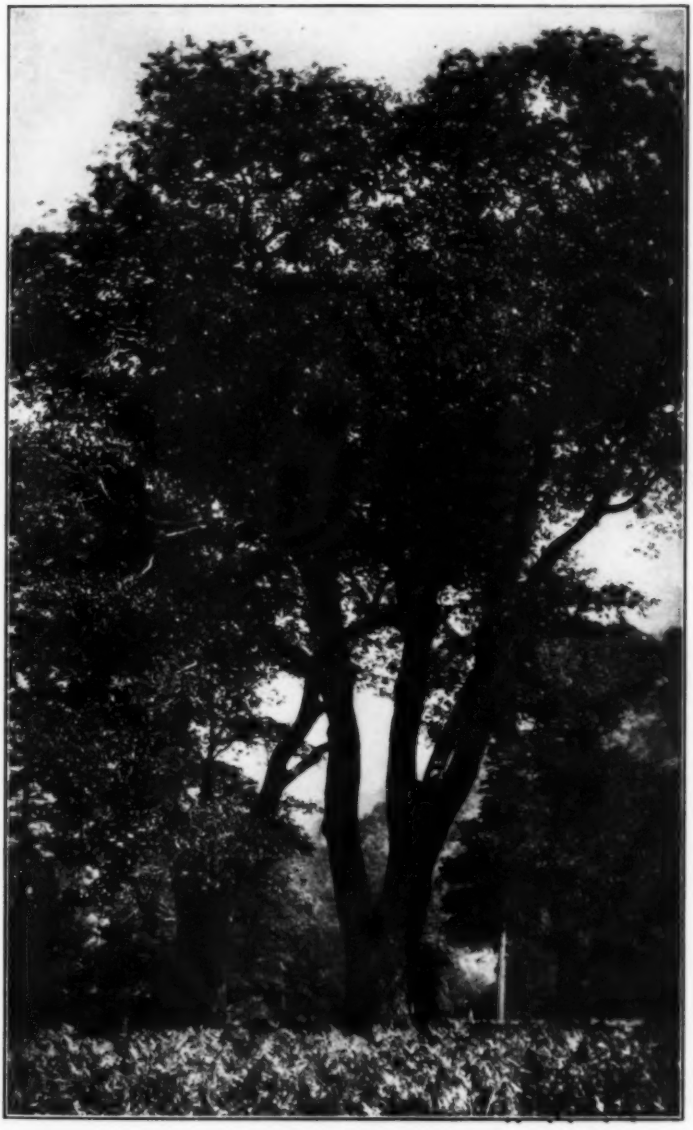
The floor of the valley is about three and a half miles long and from a fourth to half a mile wide. The lower portion is mostly a level meadow about a mile long with the trees restricted to the sides, and partially separated from the upper forested portion by a low bar of glacier-polished granite, across which the river breaks in rapids.

The principal trees are the yellow and sugar pines, Sabine pine, incense cedar, Douglas spruce, silver fir, the California and gold-cup oaks, Balm of Gilead poplar, Nuttall's flowering dogwood, alder, maple, laurel, tumion, etc. The most abundant and influential are the great yellow pines, the tallest over 200 feet in height, and the oaks with massive rugged trunks four to six or seven feet in diameter, and broad arching heads, assembled in magnificent groves. The shrubs forming conspicuous flowery clumps and tangles are manzanita, azalea, spiræa, brier-rose, ceanothus, calycanthus, philadelphus, wild cherry, etc.; with abundance of showy and fragrant herbaceous plants growing about them, or out in the open in beds by themselves—lilies, Mariposa tulips, bro-

diæas, orchids—several species of each,—iris, spraguea, draperia, collomia, collinsia, castilleia, nemophila, larkspur, columbine, goldenrods, sunflowers, and mints of many species, honeysuckle, etc., etc. Many fine ferns dwell here, also; especially the beautiful and interesting rock-ferns,—pellæa, and cheilanthes of several species, —fringing and rosetting dry rock-piles and ledges; woodwardia and asplenium on damp spots with fronds six or seven feet high, the delicate maidenhair in mossy nooks by the falls, and the sturdy broad-shouldered pteris beneath the oaks and pines.

It appears therefore that Hetch-Hetchy Valley, far from being a plain common rockbound meadow, as many who have not seen it seem to suppose, is a grand landscape garden, one of Nature's rarest and most precious mountain mansions. As in Yosemite, the sublime rocks of its walls seem to the nature-lover to glow with life, whether leaning back in repose or standing erect in thoughtful attitudes giving welcome to storms and calms alike. And how softly these mountain rocks are adorned, and how fine and reassuring the company they keep—their brows in the sky, their feet set in groves and gay emerald meadows, a thousand flowers leaning confidingly against their adamantine bosses, while birds, bees, and butterflies help the river and waterfalls to stir all the air into music—things frail and fleeting and types of permanence meeting here and blending, as if into this glorious mountain temple Nature had gathered her choicest treasures, whether great or small, to draw her lovers into close confiding communion with her.

Strange to say, this is the mountain temple that is now in danger of being dammed and made into a reservoir to help supply San Francisco with water and light. This use of the valley, so destructive and foreign to its proper park use, has long been planned and prayed for, and is still being prayed for by the San Francisco board of supervisors, not because water as pure and abundant cannot be got from adjacent sources outside



GIANT OAKS IN THE FERN GARDENS OF HETCH-HETCHY.

From photograph by F. M. Fultz, 1907.

Mrau

the park,—for it can,—but seemingly only because of the comparative cheapness of the dam required.

Garden- and park-making goes on everywhere with civilization, for everybody needs beauty as well as bread, places to play in and pray in, where Nature may heal and cheer and give strength to body and soul. This natural beauty-hunger is displayed in poor folks' window-gardens made up of a few geranium slips in broken cups, as well as in the costly lily gardens of the rich, the thousands of spacious city parks and botanical gardens, and in our magnificent National Parks,—the Yellowstone, Yosemite, Sequoia, etc.,—Nature's own wonderlands, the admiration and joy of the world. Nevertheless, like everything else worth while, however sacred and precious and well-guarded, they have always been subject to attack, mostly by despoiling gain-seekers,—mischief-makers of every degree from Satan to supervisors, lumbermen, cattlemen, farmers, etc., eagerly trying to make everything dollarable, often thinly disguised in smiling philanthropy, calling pocket-filling plunder "Utilization of beneficent natural resources, that man and beast may be fed and the dear Nation grow great." Thus long ago a lot of enterprising merchants made part of the Jerusalem temple into a place of business instead of a place of prayer, changing money, buying and selling cattle and sheep and doves. And earlier still the Lord's garden in Eden, and the first forest reservation, including only one tree, was spoiled. And so to some extent have all our reservations and parks. Ever since the establishment of the Yosemite National Park by act of Congress, October 8, 1890, constant strife has been going on around its borders, and I suppose will go on as part of the universal battle between right and wrong, however its boundaries may be shorn or wild beauty destroyed. The first application to the Government by the San Francisco supervisors for the use of Lake Eleanor and the Hetch-Hetchy Valley was made in 1903, and denied December

22d of that year by the Secretary of the Interior. In his report on this case he well says: "Presumably the Yosemite National Park was created such by law because of the natural objects, of varying degrees of scenic importance, located within its boundaries, inclusive alike of its beautiful small lakes, like Eleanor, and its majestic wonders, like Hetch-Hetchy and Yosemite Valley. It is the aggregation of such natural scenic features that makes the Yosemite Park a wonderland which the Congress of the United States sought by law to preserve for all coming time as nearly as practicable in the condition fashioned by the hand of the Creator—a worthy object of national pride and a source of healthful pleasure and rest for the thousands of people who may annually sojourn there during the heated months."

The most delightful and wonderful campgrounds in the park are the three great valleys—Yosemite, Hetch-Hetchy, and Upper Tuolumne; and they are also the most important places with reference to their positions relative to the other great features—the Merced and Tuolumne cañons, and the High Sierra peaks and glaciers, etc., at the head of the rivers. The main part of the Tuolumne Valley is a beautiful spacious flowery lawn four or five miles long, surrounded by magnificent snowy mountains. It is about 8,500 feet above the sea, and forms the grand central High Sierra campground from which excursions are made to the noble mountains, domes, glaciers, etc.; across the range to the Mono Lake and volcanoes; and down the Tuolumne Cañon to Hetch-Hetchy. But should Hetch-Hetchy be submerged, as proposed, not only would it be made utterly inaccessible, but the sublime cañon way to the heart of the High Sierra would be hopelessly blocked. None, as far as I have learned, of all the thousands who have seen the park is in favor of this destructive water scheme.

My last visit to the valley was made in the autumn of last year, with William Keith, the artist. The leaf-

SUNRISE IN HETCH-HETCHY VALLEY.

From photograph by E. T. Parsons, 1907.

colors were then ripe, and the great god-like rocks in repose seemed to glow with life. The artist, under their spell, wandered day after day along the beautiful river and through the groves and gardens, studying the wonderful scenery; and, after making about forty sketches, declared with enthusiasm that in picturesque beauty and charm Hetch-Hetchy surpassed even Yosemite.

That any one would try to destroy such a place seemed impossible, but sad experience shows that there are people good enough and bad enough for anything. The proponents of the dam scheme bring forward a lot of bad arguments to prove that the only righteous thing for Hetch-Hetchy is its destruction. These arguments are curiously like those of the devil devised for the destruction of the first garden — so much of the very best Eden fruit going to waste, so much of the best Tuolumne water. Very few of their statements are even partly true, and all are misleading. Thus, Hetch-Hetchy, they say, is "a low-lying meadow."

On the contrary, it is a high-lying natural landscape garden.

"It is a common minor feature, like thousands of others."

On the contrary, it is a very uncommon feature, after Yosemite, the rarest and in many ways the most important in the park.

"Damming and submerging it 175 feet deep would enhance its beauty by forming a crystal-clear lake."

Landscape gardens, places of recreation and worship, are never made beautiful by destroying and burying them. The beautiful lake forsooth would be only an eyesore, a dismal blot on the landscape, like many others to be seen in the Sierra. For, instead of keeping it at the same level all the year, allowing Nature to make new shores, it would of course be full only a month or two in the spring, when the snow is melting fast; then it would be gradually drained, exposing the slimy sides of

the basin and shallower parts of the bottom, with the gathered drift and waste, death and decay, of the upper basins, caught here instead of being swept on to decent natural burial along the banks of the river or in the sea. Thus the Hetch-Hetchy dam-lake would be only a rough imitation of a natural lake for a few of the spring months; an open mountain sepulcher the others.

"Hetch-Hetchy water is the purest, wholly unpolluted, and forever unpollutable."

On the contrary, excepting that of the Merced below Yosemite, it is less pure than that of most of the other Sierra streams, because of the sewerage of campgrounds draining into it, especially of the Big Tuolumne Meadows campgrounds, where hundreds of tourists and mountaineers, with their animals, are encamped for months every summer, soon to be followed by thousands of travelers from all the world.

These temple destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for Nature, and instead of lifting their eyes to the mountains, lift them to dams and town skyscrapers.

Dam Hetch-Hetchy! As well dam for water-tanks the people's cathedrals and churches, for no holier temple has ever been consecrated by the heart of man.

EXTRACTS FROM STATE GEOLOGIST PROFESSOR J. D. WHITNEY'S YOSEMITE GUIDE-BOOK (PUBLISHED 1874)

ON THE HETCH-HETCHY VALLEY, THE BIG TUOLUMNE MEADOWS, AND THE TUOLUMNE CANON,

SHOWING THEIR RELATIONSHIP, ETC.

"The Hetch-Hetchy is 3,650 feet above the sea-level, or 300 feet below the Yosemite; it is three miles long east and west, but is divided into two parts by a spur of granite which nearly closes it up in the center. The portion of the valley below this spur is a large open meadow, a mile in length, and from an eighth to half a mile in width, with excellent grass, timbered only along the edge. The upper part of the valley is a mile and three quarters long, and from an eighth to a third of a mile wide, well timbered and grassed. The walls of this valley are not quite so high as those of Yosemite; but still anywhere else than in California they would be considered as wonderfully grand. On the north side of Hetch-Hetchy is a perpendicular bluff, the edge of which is 1,800 feet above the valley, and having a remarkable resemblance to El Capitan. In the spring, when the snows are melting, a large stream is precipitated over this cliff, falling at least 1,000 feet perpendicular. The volume of water is very large, and the whole of the lower part of the valley is said to be filled with its spray. A little farther east is the Hetch-Hetchy Fall, the counterpart of the Yosemite. The height is 1,700 feet. It is not quite perpendicular. The volume of water is much larger than that of the Yosemite Fall, and in the spring its noise can be heard for miles. The position of this fall in relation to the valley is exactly like that of the Yosemite Fall in its valley, and opposite to it is a rock much resembling the Cathedral Rock, and 2,270 feet high. . . .

"The valley of the Tuolumne [or Big Tuolumne Meadows] is one of the most picturesque and delightful

in the High Sierra. Situated at an elevation of between 8,000 and 9,000 feet above the sea-level, surrounded by noble ranges and fantastically shaped peaks which rise from 3,000 to 4,000 feet higher, and from which the snow never entirely disappears, traversed by a clear rapid river, along which meadows and clumps of pines alternate, the effect of the whole is indeed most superb. The vicinity of Soda Springs [on the north side of the valley], and, indeed, the whole region about the head of the upper Tuolumne, is one of the finest in the State for studying the traces of the ancient glacier system of the Sierra Nevada." Glacier-polished granite extends over a vast area, and "this is so perfect that the surface is often seen from a distance to glitter with the light reflected from it, as from a mirror. The main portion of the valley is about four miles long, and from half to a third of a mile wide."

"The cañon of the Tuolumne runs in a nearly east-and-west direction, about parallel with that of the Merced, and some twelve miles north of it. The length of the portion included between the Tuolumne Meadows, at Soda Springs, and the head of the Hetch-Hetchy, is about twenty-two miles. During this distance the river runs everywhere in a very narrow gorge, with lofty and very precipitous walls, and with frequent and beautiful cascades, as might be expected, since the fall of the river in the distance named is about 4,650 feet, or over 200 feet to the mile. It is to be regretted that it is not possible to pass through the cañon with animals, entering at the Hetch-Hetchy and coming out at the upper end, or *vice versa*. This will undoubtedly be done in time."

TO JOSEPH LE CONTE.

By Charles Keeler.

Peace reigns in these vast halls where thou hast roamed
  And wrested secrets from the patient rocks,
And watched the waterfalls that brightly foamed,
  And marked the migrants in tumultuous flocks,—
With kindly eye interpreting each sign
As evidence of spirit power benign.

Still rear the rocks their peerless bulwarks high,
  Still sweep the cataracts elate and bright,
Still joyous hosts of flowers bloom and die,
  Still lift the pines their tassels to the light,
As when, so late, thou pondered on their ways
Through all the brightness of Sierra days.

Here in these consecrated haunts sublime,
  Belovèd through thy life's perennial youth,
Kind Nature whispered of the parting time
  And led thy spirit on its quest of truth
Beyond these symbols into high domains
Where goals that baffle now, the soul attains.

Dear friend who late unsealed my eyes to lore
  Of Nature's mystic laws, I love to think
That here in swift transition thou didst soar
  From earth's to heaven's splendor, and didst drink
Life's last draught from the mountains' melted snow,
And thus rejoicing on thy journey go.

I love to think that all thy cherished thought
  Of nature, in consummate splendor wild
Here gathered, should have in its beauty caught
  Thy being, and upgathered thee, its child,
Leading thee on, untroubled, unafraid,
Toward mightier phantasies in spirit glade.

O may the gracious memory of thy name,
  Thus linked by death with thine, Yosemite!
Still haunt the peaks in sunset's light aflame,
  For generations yet unborn to see
The splendor of the rocks and learn to trace
In granite symbols thy mysterious grace.

YOSEMITE VALLEY, July 18, 1907.

(Read by the author at the flower show held on this date at the Le Conte Memorial Lodge.)

LAKE RAMPART; WEST SHORE OF TENAYA.

LAKE RAMPART; UPPER BASIN OF RAFFERTY CREEK.

LAKE RAMPARTS.*

By G. K. Gilbert.

One summer afternoon, thirty-five years ago, I rode along a high plateau in southern Utah. My companions were Hoxie, a young army officer; Weiss, a veteran topographer, who mapped our route as we went; and Kipp, an assistant whose primary duty was to carry a barometer. Not far behind us was a pack-train. We were explorers, studying the geography and geology of a strange land. About us was a forest of pine and fir, but we rode through a lane of sunlit prairie cradled in a shallow valley. Suddenly the floor of the prairie came to an end, and we halted on the crest of a cliff overlooking a vast expanse of desert lowland. The desert was not a monotonous plain, like that of northwestern Utah, but a land of mesas, cañons, buttes, and cliffs, all so bare that the brilliant colors of their rocks shone forth, —orange, red, chocolate, blue, and white,—fading slowly into the gray of the remote distance. We were looking across the broad barren tract through which the Colorado winds in Glen and Marble cañons, and of which the Painted Desert of Arizona is a minor division. To most of us it was a supreme vision of beauty and grandeur as well as desolation, a scene for which words were inadequate; and we stood spellbound. The silence was at last broken by Kipp, who exclaimed, "Well, we 're nicely caught!" and his discordant note so carried us from the sublime to the ridiculous that our tense emotion found first expression in a laugh.

The reminiscent story has been told to illustrate the relation of the traveler's appreciation to his point of view. Kipp saw only that the cliff at our feet barred further

* Published by permission of the Director of the U. S. Geological Survey.

progress in that direction, and all that had appealed to the others most strongly was lost on him. Hoxie, Weiss, and I doubtless saw different things in the landscape, for we were trained in diverse schools, but our personal points of view all included the esthetic factor, and that factor lifted us above the plane of petty annoyance into a realm of exalted emotion. We saw what we had eyes to see. Our point of view was the measure of our perception and appreciation.

The principle is a broad one and applicable to life in all its phases, but it is peculiarly true of the traveler; and the temporary sojourner in the Sierra is essentially a traveler. Each member of a Sierra Club outing brings to the mountains a point of view, and by that point of view the quality of his pleasure is controlled. I am not prepared to say that one point of view necessarily yields more pleasure than another, but I believe there is a distinct gain whenever one's personal horizon is enlarged. To one whose main motive is recuperative or vegetative or athletic there is advantage in adding an artistic or social or scientific motive.

Scientific motives—of which I wish especially to speak —are of two types, endeavor to see and endeavor to explain. One may simply observe and compare the things of Nature, noting their similarities, their differences, and their relations, or one may also seek to discover the causes of their relations. One may note, for example, that there are pines all through the mountains; that they have common characters of leaf and cone, which mark them as pines; that they differ among themselves in various ways, so that distinct kinds may be recognized; and that each kind is restricted to certain altitudes, so that collectively they make an orderly procession from foothills to timber-line. Or one may seek to discover why there are mounds about the bases of large trees; why there are trout in some streams and not in others; or why a meadow camp is cooler at night than one in a neighboring grove. To pursue such a line of study no

preliminary training is necessary—nothing but attention. And the available themes are practically infinite in number and variety. The various insects, birds, mammals, and reptiles, the varied trees, shrubs, and flowering plants, the minerals and rocks, the forms of the landscape, the streams, the snow, the winds, the clouds,—all invite and repay attention; and problems appear at every turn. To the professional investigator such themes are a principal motive, and his purpose is to increase the sum of human knowledge. For him, indeed, attention is not the only requisite; he must have systematic methods of work, and he must acquaint himself with the work of others in his chosen field. To the business man, the professional man, or the teacher seeking recreation—to the layman, in a word, in scientific study—the scientific motive is secondary, and instead of considering the advance of science he need think only of his personal profit in intellectual growth and an added zest to life.

The homily in which I have indulged may be regarded as the introduction and defense of a somewhat technical article; or the pages which follow may be regarded as the illustration of the theme of the homily, and an attempt to develop interest in one of the minor features of Sierra topography.

On the shores of many lakes in the Sierra are rows of boulders. Sometimes they are strung along, one or two at a place; sometimes massed together so as to constitute a low ridge. They are small and large, ranging up to a diameter of several feet. In every case their position is close to the water, usually just at the water's edge. Such boulder lines and boulder ridges are known also in other regions, and have received the name of *lake ramparts*. Two examples are pictured in the accompanying plates.

Whence come these boulders? Usually on the adjacent land other boulders are to be found, in every way similar to those at the shore except that they are irregularly scattered over the surface. Usually, also, in the shallow

water near the shore there are no boulders, or if any are seen they are of large and exceptional size. Should one reason from these facts that the boulders of the rampart came from the land, or that they came from the water? An argument might be made in favor of either side, but only one of the arguments would find favor with the geologist, because he has a theory to account for the general distribution of boulders throughout the region of abundant lakes. He has learned that they were transported by glaciers, and that except where they are massed together in moraines the glaciers merely strewed them over the surface. While the glaciers were doing their work there was no distinction of lake and land, and the lake basins received their quotas of boulders along with the surrounding dry land. To the geologist, therefore, the absence of the boulders from the shallows of the lake is as remarkable a phenomenon as their abundance at the shore; and the two facts are fitted together accurately by the theory that the boulders now at the shore were once scattered over the lake bottom in shallow water, and have by some agency been moved toward the shore and massed together there.

By what agency were the boulders moved? Were they gathered from the water and heaped along the shore by the aboriginal inhabitants of the country? That, so far as I know, was the first guess made; and the name "rampart" was given in allusion to the general resemblance which some of the boulder ridges bear to walls built for purposes of fortification. The idea is not especially plausible, because the position of the ramparts does not accord with any rational theory of attack and defense; but the broader idea that the work of assembling the boulders was performed by men is not easily disproved. The evident reasons against it are mostly negative: the lack of a plausible motive, and the fact that we have no definite knowledge of similar work having been done by men. Nevertheless, the human theory has been practically abandoned; for, though not disproved, it has been

effectually displaced by a natural theory which seems reasonable and adequate.

A second tentative explanation is that the boulders were moved by waves. We know that the waves which beat on the shores of lakes accumulate sand and gravel in beaches, and we know that the greater ocean waves roll boulders also. But the waves of lakes are smaller and weaker than those of the ocean, and they are very weak in comparison on many small lakes where the ramparts are characteristically developed. There are other reasons for rejecting the wave theory, but as the lack of power seems sufficient, they need not be stated.

The theory which geographers have accepted makes ice the agent—the sheet of ice which constitutes the winter armor of the lake. If this theory is true, then the ramparts should be found only in cold countries, and such appears to be the fact. They have been described in Canada, in the New England States, in various States bordering the Lawrentian lakes, and in northern Europe. So far as I am aware, they have not been described in warmer regions, and I have myself noted their absence in Virginia, where the winter coating of ice is thin, in Florida, where the lakes never freeze, and in various parts of Marin County, California.

Stated in full the theory has the following form. In countries where the winter is cold and long, ice forms on all lakes of moderate size and depth, and acquires a thickness of several feet. Ice differs from most solids in that it is made to occupy less space by melting, but so long as it remains solid it follows the general law of solids by contracting when cooled and expending when warmed. It is to the contraction and expansion of ice that the theory appeals. The rate of change has been measured in physical laboratories and found to be such that a plate of ice one mile long would be shortened one foot by having its temperature lowered a little more than seven degrees of the Fahrenheit scale.

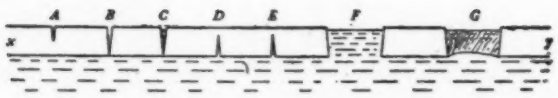


FIGURE 1.—Diagrammatic section of sheet ice on a lake, illustrating modes of cracking from changes of temperature.

In Figure 1, *x y* represents, in section, a sheet of ice resting on the water of a lake. We may think of the temperature of the ice as initially 32°. When the air becomes quickly colder the upper part of the ice is cooled and made to shrink, with the result that many shallow cracks are formed, as diagrammatically shown at *A*. If the cold continues, its effect is soon felt through the whole thickness of the ice, but the bottom layer is kept at 32° by the water in contact with it. The crack extends to the bottom, but retains its wedge form (*B*). Water finds its way into the crack, rises nearly to the top, and then freezes (*C*). If, now, the weather moderates and the upper part of the ice-sheet is warmed, expansion takes place, but the process is not the simple inverse of the contraction. The deeper of the cracks that were opened cannot be closed again, because they are occupied by the wedges of new ice. The upper part of the sheet therefore elongates, and in so doing carries with it the lower part of the sheet. The elongation of the lower part causes a new system of cracks (*D*), which start from the bottom. Unless the temperature has fallen quite to 32°, there is more or less freezing in these cracks, so that they become partly plugged by wedges of new ice (*F*). Thus, by to-and-fro changes between weather moderately cold and weather very cold, wedges of new ice are inserted in the lake ice from above and below, and it is made to expand horizontally.

Usually some of the cracks from above, instead of merely penetrating to the bottom (*B*), gape widely, so as to open a lane of water (*F*), and such a lane may be

closed by new ice (*G*). Cracks of this type run from side to side of long narrow lakes (Fig. 2), or from cape to cape of lakes with irregular shores (Fig. 3).

FIGURE 2.—Outline of lake with parallel shores, showing arrangement of master cracks.

The enlargement of a sheet of lake ice by this process thrusts its edges against the shores. The force of the thrust is measured by the strength of the ice. Its results are various, depending chiefly on the character and outline of the shores. Where a shore is steep, the ice-sheet may break against it (Fig. 4, *H*). Where the resistance to shoreward movement is strong in both directions, the ice-sheet may buckle up or down (*I* or *J*), creating an ice-ridge, or a lane of open water. These features, known in Sweden as *råkar*,

FIGURE 3.—Outline of irregular lake, showing arrangement of master cracks.

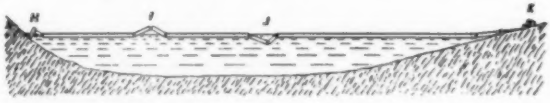


FIGURE 4.—Ideal section of ice sheet on a lake, illustrating effects of thrust caused by changes of temperature.

usually follow broad cracks of the type marked *G* in Figure 1.

On gently shelving shores the edge of the sheet is merely slidden landward, bending or slightly cracking as it rises along the slope (*K*), and carrying with it whatever may be frozen to it or in it. Some of the sand, mud, pebbles, etc., constituting the bottom is thus moved toward the land; and boulders which project high enough to be firmly grasped by the ice are dragged in the same direction, plowing the bottom as they go. In the ensuing summer, when winds stir the surface of the lake, the

waves remodel the strand, obliterating much of the work of the ice-thrust, but the shifted boulders remain where the ice left them. The next winter's ice-sheet carries them another stage in the same direction, and eventually they reach the limit of its action. Thus all the boulders which originally lay in the shallow water are finally assembled along the shore, where they constitute the lake rampart.

Plate A shows a rampart on the west shore of Tenaya Lake, not far from its outlet. On the land at the right is a sprinkling of boulders, such as we may suppose to have once existed on the lake-bed at the left, but none now jut from the surface of the water. The larger boulders of the rampart are three or four feet in diameter, and in the distance there are two of still greater size. But the largest may possibly occupy the positions given them originally by the ancient glacier. Plate B shows the margin of a lake on the plateau drained by Rafferty Creek. The rampart here forms a broader ridge, on which soil has gathered, so that it is covered by vegetation. Just here the lake has its outlet, which discharges through openings between the boulders of the rampart. In this view also may be noted the scattered boulders of the adjacent plain, and the absence of boulders from the shallow water of the lake.

The theory is not a mere abstract deduction from general principles, but finds support in a body of concrete facts. The cracking of lake ice from cold is a familiar occurrence wherever winters are severe. As a boy, in western New York, I skated on a landlocked bay several miles long, and each winter its ice-sheet was divided by cracks that ran from side to side. On a still, cold night I have heard them form, the ice bursting with a booming sound that slowly died away. I thought then that a crack which started near me required a minute or more to span the bay, but suspect now that its propagation was much swifter than that of the sound-waves on which my impression depended. Sometimes the cracks

opened so widely that the skaters found pleasant excitement in crossing them by flying leaps; and a crack into which I once fell must have been three or four feet broad. Being then quite innocent of theories, I did not compare its width with the temperature, but the air that day must have been bitterly cold, for my clothes were frozen before I could reach the nearest house.

Where winters are long, frozen lakes are often utilized as regular routes of travel, and when this is done the cracks and subsequent bucklings constitute obstructions that must be dealt with, if accidents are to be avoided. Often, too, the crowding of the ice against the shore makes a zone of insecurity which must be bridged by the roadmaker. These obstacles to travel early drew attention to the expansion and contraction of lake ice and led to its rational explanation.

Finally the shoreward movement of a boulder has been almost directly observed. Its change of position has been noted from day to day; and as the ice melted in the spring the furrow plowed by its lower edge has been discovered. So the chain of evidence is practically complete.

There is a literature of the subject, from which I have selected a few titles, but I do not seriously advise the members of the Club's outing parties to consult it. They will find far more pleasure and profit in personal studies on the shores of the lake, especially if they are able to visit them before the complete melting of the ice and while the effects of the winter's thrusting are still fresh and unimpaired by the wash of waves.

REFERENCES.

C. A. Lee. *On certain rocks supposed to move without any apparent cause.* American Journal of Science; Vol. 5, 1822, pp. 34-37, and Vol. 9, 1825, pp. 239-241.

J. Adams. *Remarks on . . . some phenomena of moving rocks . . .* American Journal of Science; Vol. 9, 1825, pp. 136-144.

MONTGOMERY C. MEIGS. *On movements caused in large ice-fields by expansion and contraction.* Bulletin Philosophical Society of Washington; Vol. 2, 1874-78, Appendix VII, pp. i-iv.

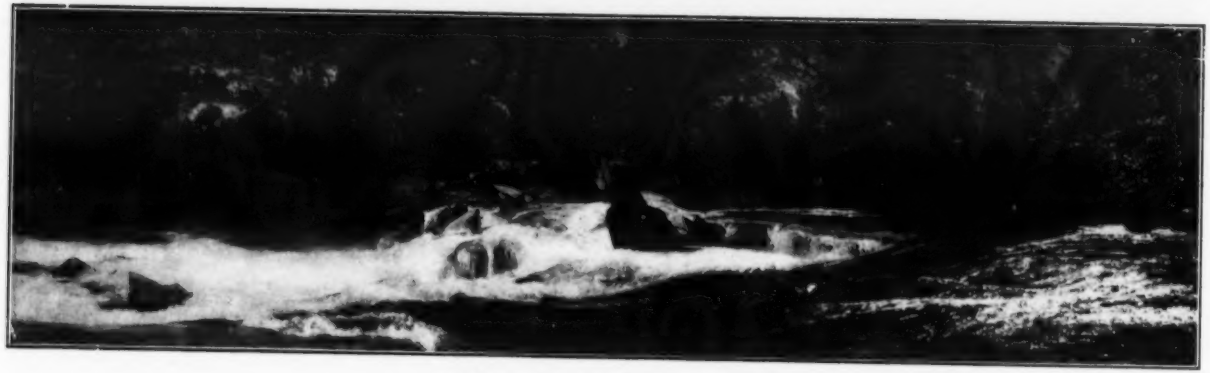
E. R. BUCKLEY. *Ice Ramparts.* Trans. Wisconsin Academy of Science, Arts, and Letters; Vol. 13, Part 1, pp. 141-157.

J. P. GUSTAFSSON. *Om stranden vid några småländska sjöar.* Geologiska Föreningens i Stockholm Föhandlingar; Vol. 26, h. 1, pp. 147-153.

GUSTAV BRAUN. *Eiswirkung an Seenfern.* Schriften der Physik.-ökonom. Gesellschaft zu Königsberg i Pr. XLVII. Jahrgang 1906. pp. 8-13.

U of M

NEAR SIERRA CLUB CAMP IN TUOLUMNE MEADOWS.



A GLIMPSE OF THE TUOLUMNE CAÑON.

From photographs by E. T. Parsons, 1907.

THE GRAND CAÑONS OF THE TUOLUMNE AND THE MERCED.

By Marion Randall Parsons.

The Sierra Club camp for the Outing of 1907 had been established in the Tuolumne Meadows more than a week before we started, seventy strong, on the trip into the cañon of the Merced, a region which none of us had ever visited before. With a pack-train of twenty animals we left camp early one morning, taking the Lyell trail as far as Rafferty Creek, and there leaving it to follow an old sheep trail leading up its west bank to Tuolumne Pass. Near the top of the pass the trail emerges from the scattering forest of tamaracks into a broad meadow-land, walled on either side with snow-streaked mountains. Half a mile of boulder-strewn country, still partly covered with snow, brought us to the base of Vogelsang Peak, where the trail turns, crossing the divide to the north of the peak and striking down the cañon of the McClure Fork.

The McClure Fork rises in a grim, desolate cirque between McClure, Vogelsang, and Florence. Passing rapidly through the alpine meadow region and the rocky home of the juniper, it races down to meet the madcap companions that join it among the hemlocks and tall firs that border its lower reaches. A long zigzag brought us down at last to the Merced Cañon, here a level floor covered with a thick growth of conifers and aspens. The fir grove where camp was established was full of dusky shadows, but the blazing camp-fires, the merry voices, and the moving figures with their barbaric touches of red and green made a busy scene, full of life and stir, in strange contrast to the twilight stillness of the woods. A sub-forest of brakes stretched beneath the tall shafts of the firs, and a tangle of willows and aspens bordered the river, a quiet, dark, smoothly flowing stream that

From photographs by E. T. Parsons, 1907.

flashed greetings to the stars a little later when the moon shone out.

Morning brought an increased realization of the cañon's wonderful beauty. Lying only a few miles above Little Yosemite, it is rarely visited, as the cañon becomes almost impassable a couple of miles below Lake Merced, and for many years the only trail entering it was the steep, circuitous one we had traveled. A trail has now been built to join the Sunrise Trail, but the Upper Merced Cañon is still far enough off the beaten track to preserve all the freshness of a virgin country.

The cañon has two somewhat unusual features—its lakes, Washburn and Merced, smooth, deep-blue sheets of water, and the curious mingling of forest-land and meadow in the alluvial stretches that line the river bank. A cañon meadow is generally an open bit of country, bordered, but unencroached upon by trees; while here dark firs and glinting aspens are scattered over the soft sward, throwing now a deep shadow, now a twinkling green shading across the tender grasses and flowers. Between the rocky shoulder just below Lake Merced and the wall of granite that now shuts the cañon off from Little Yosemite lies Lost Valley, one of those wooded parks rich in meadows and flowers which Dame Nature loves to hide away in the heart of a grim waste of granite rocks. The whole Merced basin is an ideal refuge for deer, and we had many demonstrations of their number and fearlessness, one of them even venturing to investigate a sleeping-bag and its occupant.

The second morning of our stay saw a great weighing of provisions and packing of bedding, for it marked the beginning of our knapsack trip over to Mt. Ritter. Only fifteen of us undertook this, as we had five days' provisions to carry and our way led across a difficult and, to us, entirely unknown country. The first day's travel was short, and, except for a bit of talus work along the shore of Lake Washburn, comparatively easy. Near the outlet of the lake we crossed to the south side of the river to avoid

LAKE WASHBURN, MERCED CAÑON.

LAKE MERCED, MERCED CAÑON.
From photographs by E. T. Parsons, 1907.

some huge blocks of granite that made traveling with knapsacks almost impossible, but we later found considerable difficulty in making our way along the southern shore of the lake. A very short stretch of blasting would make the more open northern bank accessible to pack-trains, which could then be taken as far as the amphitheater at the head of the cañon. We did not regret the extra work, however, for in making our way up the southern bank of the river above the lake we found, bubbling forth close to the river, a soda spring whose waters were pronounced to be the equal of the Lambert Spring—even better, some of us maintained. Soon afterward we reached the rocky amphitheater where we had planned to camp; but, finding that we were still fresh, and knowing how difficult the next day's work must be, we decided to go on a little farther. So after a brief rest we shouldered our packs again and climbed to the top of the cliff over which the Triple Peak Fork tumbles. Near the head of the fall we made camp. The tamaracks gave but a scanty shelter overhead, and the skies looked ominously like rain; but we chose the most sheltered spots for our sleeping-bags, built a roaring fire against a great boulder, and, after a business-like and highly satisfactory dispatch of supper, felt that cheerful unconcern towards mere weather that marks the well-fed mountaineer.

Evening wrought a wonderful change in the somewhat desolate spot. The scrawny tamaracks, outlined against the brilliant clouds, formed a sky-line of unexpected picturesqueness. At our feet, to the westward, lay the dusky cañon, whose shadows were broken at the farther end by a bit of flaming sunset glow mirrored in the still surface of Lake Washburn. Beside us the turbulent stream, while still aglimmer with the light from the west, caught a new, strange gleam from the east, and turning we saw the whimsical face of the full moon appearing above the tamaracks—a midsummer moon; and who knows what revelries the hidden elves were holding in the falls below us where the silver drops were flung so high?

Early the following day, just as the chain of great peaks from Clark to Isberg was coming into sight above the forest-clad walls of the cañon, we crossed the trail that coming from the south, from Isberg Pass, joins the Tuolumne Meadows trail in the McClure Fork Cañon. Had we chosen to follow this, sunset would have found us back in camp in the Tuolumne Meadows. But Ritter still called; so we turned our faces to the east and trudged on. Here for the present we must leave the Ritter party, whose story will be told later, for this paper is designed to describe the course of a possible cañon highway from the Yosemite to Hetch-Hetchy.

Two days after our return from Ritter sixteen of us, the first detachment of the twenty-eight members who made the descent this year, started on another knapsack trip—down the Tuolumne Cañon. We left camp armed with four cameras, a light supply of bedding, and provisions for six days. Four days are ample for a scramble through the cañon, but we planned to spend one day in a partial exploration of Pate Valley and have enough extra time to make loitering in the more beautiful parts possible.

We crossed the river at our Tuolumne camp and followed the well-marked trail that leads down the north side as far as Conness Creek. The late snows this year kept back the summer growth, and save in occasional little gardens especially favored by the sun few flowers were yet abloom. But here in the lower reaches of the Tuolumne Meadows all in a moment summer had come. So often in a mountain scene a single color strikes the dominant note. This was a purple morning. Purple daisies and wee violets dotted the meadow; under the scattering trees higher on the slope masses of lupine were spread, and the shadows on the great domes across the meadows and on the cliffs farther down the river were all suggestive of the same tone.

Near the end of the meadows the trail takes an upward turn, soon to plunge down again through young hemlock

groves into the cañon of Conness Creek. Immediately above and below the junction of this stream with the Tuolumne are the first three falls of the wonderful series of stormy cataracts which mark the river's course through this wild rockbound gorge. Below the falls the river flows quietly for a space, between banks lined with mingled pines and deciduous trees. Here

> "Willows whiten, aspens quiver,
> Little breezes dusk and shiver
> Thro' the wave that runs forever
> By the island in the river
> Flowing down to Camelot."

Many a legendary city lies at the river's end, for its path is an open highway into the land of dreams. Such a merry, blithesome companion it is, one of the great fellowship of voyagers, akin to the sailing clouds, the flocking birds—vagabonds all.

Alluring as the river's call was to all our vagabond crew, to those of us who possessed the piscatorial instinct it proved fairly resistless. For more trout were visible, lazily swimming about and provoking the rod, than would have sufficed to feed our lusty band for a month. In spite of the unwritten law that fishing were better postponed until the day's travel was over, one or two rods came apologetically forth, and for half an hour the happy fishermen wielded a busy arm.

All this had been mere pleasant dalliance, but soon the real work began. At the foot of the first great cliff a talus-pile, composed of huge blocks of granite interspersed with brush, completely filled the cañon from wall to river. Here it meant climbing and jumping from rock to rock, or, worse still, fighting our way through masses of stiff manzanita, chinquapin, or azalea, which caught in our packs and clothing and made each step a struggle. We soon had cause to regret our lingering in the easier paths, for sunset drew near and no sign of open country appeared. Coming at last to a spot where the brush was little more than a foot high and where the rocks

were rather more scattered, we resolved to make the best of a bad business and go no farther that night. Our camp, while somewhat lacking in the elements of ease, had one distinctly novel feature—a glaciated kitchen. The rocks in the open spaces where it was possible to build a fire were all of smoothly polished granite, whereon our hob-nailed feet performed strange antics. But it was a wonderfully beautiful camp. We were on a bluff overlooking a great stretch of cañon; beside us the Upper California Fall boomed and thundered, and farther down we could see mist rising where the river took another wild plunge.

The Tuolumne is one of the largest of our Sierra rivers, much greater in volume than its quieter neighbor, the Merced. Its falls, often of an imposing height, are none of them sheer, none of them giving that impression of pure joy of living with which the Merced waters leap into the great Nevada abyss. For the Tuolumne's is a sterner, stormier course, beset with giant rocks against which even its splendid strength is impotently hurled, and its joy is the joy of battles. But it is a strange thing, standing beside one of these giant cataracts where the ground shakes with the impact and where every voice of wind or living creature is silenced in the roar of the maddened waters, to see under what a delicate fabric this Titan's force is veiled—a billowing, gossamer texture, iris-tinted, with jeweled spray flying high upon the wind.

For two hours the next morning our course was a continuation of the hard work of the previous evening, with the added trial of slippery glaciated surfaces where those of us who were not provided with rubber overshoes or tennis shoes had to work our way down by means of cracks in the granite and little tufts of grasses and brush growing in the larger crevices. Return Creek, which we had expected to find some difficulty in crossing, proved to be spanned by a convenient log, and beyond this for a short time we had somewhat easier traveling. We found that we generally made better progress by keeping close to the river, as there the brush was less

UofM

MUIR GORGE, TUOLUMNE CAÑON.

Copyright, 1908, by F. M. Fultz.

dense and frequent level alluvial deposits gave us the longed-for opportunity to walk upright instead of scrambling or crawling.

It is impossible to do justice to the cañon after one brief journey through it; impossible to set down in order the details of that day's travel and the next, confused as they were by the consciousness of tired muscles and eyes bewildered by the all too hurried succession of interests. Little more than impressions remain—memories of cliffs rising from three to five thousand feet above us; of a walk of half a mile on stepping-stones along the river; of more talus-piles; of the entrance into the rattlesnake zone; of a walk through a still forest of tall firs and young cedars, where our voices seemed to break the silence of ages; of more talus-piles; of a camp beneath the firs, among deep fern-beds, and of the red ants that there congregated; of more brush and more talus-piles; of a look down Muir Gorge and a hot climb up a thousand feet over the rocks to the cairn of stones containing the precious register; of a cliff extending to the river's edge which presented the alternative of edging across it on a crack or climbing a five-hundred-foot hill to get around it.

Near nightfall of the third day we chanced upon a bear trail at the head of Pate Valley which led us through a heavy growth of young cedars and past a swampy meadow, where we saw a bear-wallow, to the bank of Piute Creek, near its junction with the Tuolumne. Those arriving first at this spot built the fire and caught some fish, and it was a welcome sight to most of us to see the boiling water awaiting the coming of the soup powder and the cleaned fish ready for the tardy frying-pan. One by one the utensils and provisions appeared upon the scene (at that time of the day one does not worry over the safety of a fellow-hiker who has lingered overlong upon the trail; one laments the absence of the tea-kettle or the rice), and soon we were enjoying supper by the flickering light of the camp-fire and one tallow candle.

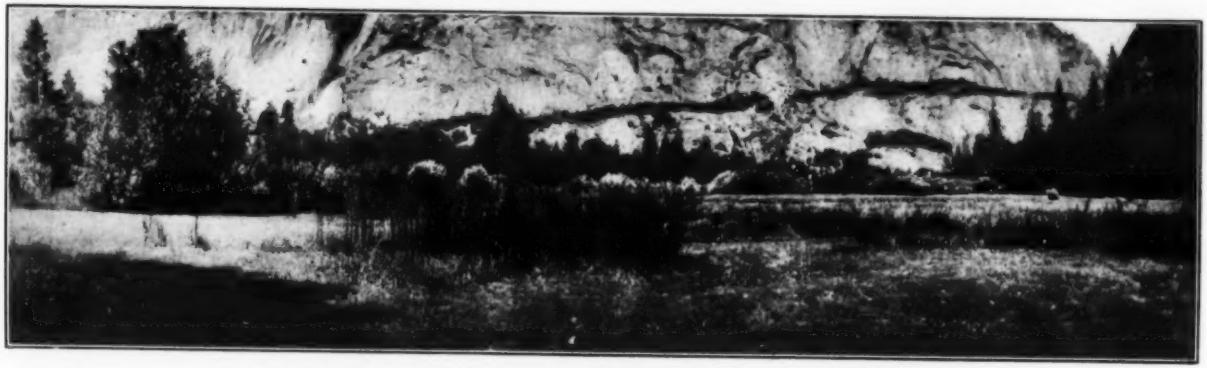
Pate Valley is a beautiful example of the gentler aspect of the cañon—a high-walled, heavily wooded valley, with clear, swift-running streams, tall fern-beds, and open grassy meadows dotted with oak-trees. During the day we spent there we were fortunate enough to find an old Indian encampment. One of the oak orchards, sloping back from the river, ended in a high rock wall whereon some hieroglyphics were painted in red, and near which were many traces of former Indian occupation, smoke-blackened rocks, piles of obsidian chips, and a mortar and pestle.

Having planned to cross the river at Pate Valley and make the rest of the trip on the south side, thus reversing the route taken by the party of three years ago, we were greatly relieved to find a log which with the aid of our long rope would serve to carry us across the first and largest branch of the river, here divided by a narrow, rocky island. The log was not very inviting to look upon. Its roots lay some ten feet from our bank, and this space was spanned by two smaller logs, one of which was inclined at a steep angle and very slippery. After crossing these and reaching the root there was a space of several feet where the big trunk was lying under rushing water. The rope, tied from the root to a branch at the farther end, served as a hand-rail, and one by one we slowly edged across. Over the second branch a great log had fallen, giving us a safe and easy crossing; but what was our dismay to find beyond this a third branch, fully as large as the second. Exploration up and down the little island showed that there was nothing to do but wade. The water came nearly to our waists and the current was quite strong, but with the help of the rope we made the crossing without accident.

Below Pate Valley the cañon walls are less precipitous and the river fall more gradual. From this point the brush was the worst difficulty we had to overcome. On the south side there are only three places after leaving Pate Valley where the course lies for any distance far

From photographs by E. T. Parsons, 1907.

CROSSING ON LOG, PATE VALLEY.



A PORTION OF THE FLOWERY PARK-LIKE FLOOR OF HETCH-HETCHY.
From photographs by E. T. Parsons, 1907.

from the river—the first at the point where an old Indian trail enters the cañon, near Morrison Creek; the second about two miles above the Little Hetch-Hetchy; and the third immediately above it. In all of these places considerable climbing has to be done to surmount cliffs impassable at the river's edge.

It is to be hoped that before long the trails will be completed, making this whole wonderful cañon and its beautiful sister, the Merced, accessible to the many travelers who lack the strength to endure the hardships that at present beset the way through both cañons. The scenic splendor of such a circuit, starting from the Yosemite and traversing the Merced Cañon, the Tuolumne Meadows, the Tuolumne Cañon, and the Hetch-Hetchy, could never be equaled in the Sierra.

Our last camp, a mile above the Little Hetch-Hetchy, was made memorable by feeding to satiety the boys of our party, in whose improvident and ever-hungry eyes the commissary had seemed unnecessarily well-guarded and evenly apportioned. Now, with the end of the journey in sight, we could afford to be recklessly generous in the matter of hasty pudding and bacon. Now, too, we could fish to our heart's content in the sparkling river, could loiter that whole last beautiful day among the great pines and oaks and the young cedar forests, confident that but a few easy miles away a hearty welcome and a good commissary awaited us in the Sierra Club camp in Hetch-Hetchy.

A peculiar charm clings to the last days of an outing. Around the last camp-fires the climax of good-fellowship is reached; and in the day-long ramblings the freshness and beauty of the mountain life seem to gather new meaning as we approach the time when it must all be left behind. And so we love to linger by the way, coming late into camp, and tasting each day's pleasure to the full; for the mountain paths are many and the days of our pleasuring all too few,—and who knows when we shall pass this way again?

THE WATER-OUZEL.

By C. H. Sholes.

O blissful Sprite! enrapt of solitude,
  Elusive as the light, effect or cause
  Art thou of charms which make all human laws
And ties less dear to me than wildest wood?
Shy songster of the cañon's misty mood,
  Where sun and shade keep tryst with spray and pool,
  Where fragrant winds dip in and shift and brool,
And filter sunshine on thy tender brood,
Wouldst thou could put some magic in my blood
  To make me throb and thrill and sing like thee,
Out-rivaling e'en thy stream's impetuous flood,
  Thou Joy incarnate, woodland ecstasy!
What thou hast give me, O marvelous bird,
To sing my joys and sorrows in one word.

THE WATER-OUZEL.

Photograph by Gertrude Metcalfe, Mazama Outing, Mt. Baker, 1906.

To secure so fine a picture of the Ouzel in his native haunts is an achievement worth mentioning. The result exhibits that rare coincidence which might be striven for a thousand times without success. The bird has just alighted,—witness the numerous ripples in the water,—and his whole being is so alert with doubt, suspicion, and curiosity regarding the intruder, that one can almost see his wings quiver with indecision. A quarter of a second sooner or later, and the film would have spelled failure.

BIRD LIFE OF YOSEMITE PARK.

By Charles Keeler.

Amid all the splendor of deep-scored cliffs of granite, sculptured in domes and peaks and cathedral spires, of exuberant waterfalls and foaming rapids, hurrying with unceasing silver voicing to the level valley floor, where the green Merced meanders peacefully on past forests of spruce and pine, and meadows patined with variegated flowers,—amid all this sublime pageant of nature we must not overlook our little friends, the birds. They are all about us, in the swaying tips of lofty incense cedars, amid the sedges and daisies of the mountain meadows, upon the austere rocks of aspiring crags, and sporting in mid-air on tireless wings. Let us, in all friendliness, seek out a few of these happy choristers, that we may know one another when next we meet.

Early and late rings out the monotonous cadence of the robin's flute, sounding like a snatch of one of Schumann's arabesques. Who does not know the robin, with his prim air of opulency, his brisk hop, his hearty call? If you have never been introduced, by all means look him up. In size he comes between a sparrow and a dove, and his earth-red breast will reveal his identity. His back is slate-colored, the head and tail darkening to blackish; his throat is white, streaked with black, and the belly is plain white. We may even have the good luck to find his wife in the mud-plastered straw nest, setting upon her blue eggs or busy satisfying the wants of her clamoring brood. Her colors are duller than those of her gentle lord, but similar. When the young first put forth their feathers, they are speckled somewhat after the fashion of their near cousins, the thrushes.

Whether you will or no, you cannot escape acquaintance with the jays—the big crested blue-fronted jays

that call and shout and make merry in the pines, that descend upon your camp with insolent nonchalance and help themselves to your stores without so much as by your leave, that flirt and quarrel with one another by turns, and fight with every other bird passer-by. They are gay and careless vagabonds, yet withal captivating with their very audacity. The fore part of the body is of a dark sooty brown color, the rear parts are dark blue, lit up by a brighter shade of blue on the black-barred wings and tail, and with streaks of blue on the blackish-brown head.

In striking contrast to these boisterous mad-cap camp followers, is that sedate exotic, the western tanager. The colors of the male are so gay that he can well afford the air of simple dignity which he assumes. You may know him at once by his canary yellow plumage splashed with red or crimson on the head and neck, by his black back, wings, and tail, and the two yellow bars on the wings. He is about the size of a large sparrow. A retiring frequenter of the forest leafage, he nevertheless comes into the open about camp and in his quiet splendor makes himself very much at home. His mate is soberly attired in olive greenish and yellowish. The characteristic abbreviated call-note of these birds may be heard in the valley at all hours of the day; the song less frequently.

Another faithful haunter of the camp and of all pleasant woodland nooks in the valley is the black-headed grosbeak. He is a sturdy, stocky, gaily bedecked sparrow, with thickened bill, as his name implies, and a musical though rather monotonous roundelay which is forever ringing through the pine boughs of a summer day. His black head is cleft by a median line of orange brown; he wears a buffy collar about the back of his neck; his back is black, and his black wings and tail are strikingly varied with markings of white. His rump and breast are of orange brown, the hue brightening to yellow on the belly and wing linings, so that alto-

gether he is a well-marked individual and not to be mistaken. His mate is duller in tone, the black being replaced by mottled brown. As she leads her brood through the forest she calls them with a sweet crooning whistle which is one of the familiar notes of the midsummer-time.

Upon any sandy or gravelly bar of the river one may chance upon the only long-legged shore-bird or wader of the Yosemite—the spotted sandpiper. You may know him by his white breast spotted with brown, his brown back, his slender feet, his long bill and his habit of running about and poking into the sand for food. He is not to be confounded with that water-sprite of the boisterous mountain streams, the water-ouzel, that intrepid little stone-colored waif that runs into the rapids where they foam most madly, braces himself for a plunge and ducks under in search of his well-earned meal. The ouzel is a land bird that has taken to the water and become an adept in this most exciting kind of aquatic sport. He cannot be mistaken in his suit of gray for any other bird, for no other haunter of the rock-strewn rapids will coolly flit down into the icy water and disappear from view, bobbing up anon as serenely as if it were a matter of course to court death unceasingly in such seething, surging torrents.

On first arriving in the Yosemite, the majesty of the rocks so dominates the mind that one can scarce bring the attention down to anything so slight as a bird, but as the imagination becomes adjusted to the unaccustomed scope of nature, the pageant of wild flowers and the birds flitting about in forest and meadow give that humanizing touch of frailty and tenderness which is so entrancing in its contrast to the austere grandeur of the everlasting walls of granite. The tiny rufous and calliope humming-birds—the most diminutive of feathered forms—buzzing and darting amid manzanita and ceonothus bushes, full of the vim and zest of life compacted in such mites of bodies,—how the fancy roams

from contemplating them as they flash in sparkling livery of iridescent green and coppery red and lilac to the awful cliffs toppling above their fairy bowers!

And then there are the little brown creepers—frail, slight, timid creatures with high lisping call notes—that cling to the pine trunks, busily hopping in spirals up the trees and prying daintily with their long slender beaks into the bark crevices for their insect food. Their backs of streaked brown and gray harmonize so closely with the tree-trunks that it requires a sharp eye to detect the tiny fellows as they continue their methodical and unceasing labor of food hunting. More noisy in their habits are those other creeping gnomes—the red-bellied nuthatches. Their characteristic iterated call-note once learned is an unmistakable evidence of their whereabouts. Their black caps, gray-blue backs and reddish-brown breasts, taken in connection with their diminutive size and their habit of clinging to the trunks of trees instead of alighting on branches, will serve to make them known even to the novice in bird-craft.

With these amateur bark-pryers we may contrast the masters of this mode of life—the woodpeckers. Structurally widely sundered, the similarity of their habits brings these two groups together in mind, but the woodpeckers, with their toes paired, two forward and two backward, their stiff tail props, their slender wiry necks, and their stout beaks, are set apart as the bark dwellers *par excellence*. The California woodpecker, one of the most showy members of his tribe, has a black back, burnished with bluish luster and a white rump-patch. The top of the head is crimson with a white border on the forehead; the chin and breast are black, with a white or sulphur-yellow throat area between, and the white belly is streaked on the sides with black. The harsh rattling call-note of this bird—*ka-rak-a, ka-rak-a, ka-rak-a,* is unlike any other bird-sound in the Sierra, and thus affords a ready means of identification. Both the California and Harris's woodpecker beat a resonant tattoo

upon the tree trunks, but the short abrupt squeak of the latter bird serves to distinguish it even at a distance. The black back of Harris's woodpecker is interrupted by a broad white streak, and the male has a dash of scarlet on the head. The under parts are plain grayish white.

But by all odds, the most unusual of the woodpeckers in appearance is the familiar and widely distributed red-shafted flicker. A big easy-going fellow is the flicker, marked by the bright red shafts of the wing and tail feathers, the white rump, the black breast crescent, the scarlet mustache streaks (of the male only). The general color of the body is a pale brownish pink, barred with black above, and with round black dots on the under parts. The flicker has a great variety of call notes, loud, striking and easily recognized when once learned.

I need but allude to the so-called game birds which happily here enjoy perpetual immunity from human persecution. An occasional mallard duck may be seen swimming on the glassy waters of Mirror Lake, giving a touch of life to the otherwise unearthly splendor of this little pond, upon whose surface is imaged such a pageant of granite cliffs and sky-searching peaks. Flocks of band-tailed pigeons, with their deep cooing call notes, are common in the valley, the trees beside the Merced being favorite roosting places. Mountain quail are to be found in the chaparral, the long sweeping head plume and chestnut hue on throat and sides marking them at once. In the spruce and pine trees on the summit of the cliffs about Yosemite, the sooty grouse, a big blackish brown hen-like bird, sounds its strange muffled booming.

I cannot recall those sugar-pines and silver fir forests that crown the Yosemite heights without a thrill of delight. Here the poor-will utters its strange call through the night-time and the mountain chickadees lisp and chatter merrily by day. The chickadees, those social care-free happy-go-lucky spendthrifts of the pines, in their suits of gray, set off with head and throat markings

of black—how they enliven the somber forest solitudes with their merry ways! And their more splendid cousins, the ruby-crowned kinglets, are there also! Veritable little kings, with scarlet crowns, olive-green backs, and gray breasts—tiny forest sprites, flitting ever from spray to spray in quest of insect food, or pausing now and again to sing their lovely song.

And those enchanting mountain meadows, tenanted by blue larkspurs and purple daisies and golden mimulus, where the streaked brown song-sparrow sings as in the valleys at home, and the summer warbler in golden livery utters its joyous lilt! Lovely violet-green swallows are cleaving the air or skimming over the streams, the tanager's *twitch up* sounds from the nearby forest, the robin warbles, and the hermit thrush utters its far-away ethereal strains. Ah, the hermit thrush,—soberly attired in olive brown above, brightening to reddish brown on wings and tail, and pale buffy below, spotted with brown,—how its witchery of unearthly tones lingers in the mind, bringing back as by an enchanter's spell, all the delight of the mountain solitudes, the fragrance of the pines, the wonder of leagues of serrated snow-mantled crags, the awful gorge with the peaceful green floor at foot of those stern rock walls!

Only upon the summit of Cloud's Rest or the higher peaks beyond is that droll hob-goblin of a bird, Clark's crow, to be found. In size about that of a chunky jay, the nut-cracker, as he is called, is one of the most absurd and amusing of all our birds. Fancy him all in gray, with black wings white banded, and white tail with the central feathers black, with long sharp beak, a veritable gray friar on a frolic! Why he chooses to live on such bleak storm-swept heights, where few other birds save the arctic pink-and-chocolate leucostites venture, is more than I can guess. He is a sociable roustabout, and always finds himself in jovial company. A flock of these birds, tame, saucy, irresistible in their antics, hopping over the rocks with head now on one side, now on the other,

with their queer hoarse calls and general airs of proprietorship and curiosity, will claim the attention of the most casual observer, even though spread out about him stretch measureless leagues of tortured mountain ranges, of bewildering gulfs of granite, of somber forests of pine, and wastes of snow.

The sheer cliff walls of the Yosemite are the breeding-place of flocks of those peerless aerial voyagers, the white-throated swifts. They are first cousins of the familiar chimney swallow, so called, of the Eastern States, and are more or less related to groups as widely different in habits and appearance as the whip-poor-wills and humming-birds. In coloration the white-throated swift is as unpretentious as the nut-cracker, its upper parts being blackish brown, and its under parts white. The under-tail coverts are dark, however, and the wings are varied, with white patches. The extraordinary thing about the swift is its impetuous flight, its endless rush through the air on rapidly vibrating wings, the velocity of its darting hither and thither after insect prey. As we look up at the dizzy heights of the vertical parapets of granite, we may descry a flock of these accomplished aeronauts, sporting high aloft as care-free as a crowd of children at play, and catch the incessant chattering calls floating down to us as from another world. Their nests are built of sticks, gummed to the cliff walls with their saliva, so their babies are born cliff-dwellers and fledged upon the heights of fear.

In the Yosemite Valley the cliffs rise so abruptly that birds of the Alpine Zone are brought into more intimate relationship with the characteristic forms of lower levels. It is so easy for birds to fly down from the rim of the gorge to that entrancing valley where they may disport beside the still water in meadows green. Thus the junco or snow-bird (Thurber's junco the books call it) is to be expected at a higher level than the floor of the valley, but cannot resist the temptation to stray into this paradise. The junco is a member of that large group, the

finch family, in which we have already encountered the variegated grosbeak and the streaked song sparrow. But the junco is soberly attired in Quaker gray, turning to brownish on the back; the head and neck black, sharply contrasting on the breast with the white of the under parts. The white outer tail feathers are also a mark of identification for this species, and may always be noticed as the bird takes wing. The junco is a sociable little fellow and may generally be found in company of his own kind.

One of the most familiar and friendly of the humbler birds about our camp was the chipping sparrow. He has a bright reddish-brown patch on his head, contrasting with the blackish forehead. His back is brown, streaked with gray and black and his breast plain ashy gray. His song is a long sustained trill, without variety, but withal the chippy is such a simple confiding little creature that you forgive him for his lack of brilliancy or splendor.

The reddish brown crown-patch and black forehead of the chipping sparrow would not serve as an infallible mark of identification, for another much less common, and therefore, I suppose, more interesting sparrow of the Yosemite is similarly colored. I refer to the green-tailed towhee, which is quite unlike the demure little camp-follower we have been observing, in that its back is olive-green and its throat pure white, bordered with dark stripes. Its breast, however, is ashy gray, like the chipping sparrows. An inhabitant of the low shrubbery, it has a sweet and varied song, which may baffle the tyro in bird lore on account of the retiring habits of the minstrel.

Then there is the gay lazuli bunting, a care-free prince of the underbrush, a little sparrow decked out in brilliant azure, with the breast ruddy brown in contrast, a tireless songster, flitting amid the azaleas and ceonothus and enlivening the groves both with its brilliant livery and its animated roundelay. And in the pine trees carols

another gay sparrow, the California purple finch—a lovely songster with head and throat of a bright rosy-red hue, this shade extending more or less down the brown-streaked back. The females of both these brightly bedecked finches are appropriately attired in modest brown, rendering them less conspicuous in their tender care of their nestlings.

We have already had a glimpse of the golden summer-warbler, but there are other members of this family haunting the leafage. Unlike the sparrows, with their stout conical beaks for crushing seeds, the warblers have fine slender bills for picking insects off the leaves of the forest trees. They are for the most part shy, restless, dainty sprites of the woodland solitudes, and fortunate is the bird hunter who makes their acquaintance.

One of the most beautiful of this group is the exquisite creature unhappily named the pileolated warbler. Let us call him by the less pedantic name of black cap, for his jetty crown contrasting with the bright gold of his forehead marks him at once. The back is bright olive-green and the under parts clear brilliant yellow. The female lacks the black cap of her mate, but is otherwise similarly colored. Fortunate may we consider ourselves if we catch even a glimpse of the shy hermit warbler, with its bright yellow head, its gray, black-streaked back and white under parts. But Audubon's warbler is a friendly and familiar nester in the pines, and may be known by the patches of yellow on crown, throat, rump, and sides. The back is slaty blue, streaked with black, the breast is black, and the belly white. The black wings and tail are conspicuously marked with white, so that altogether a full-plumaged male of this species is strikingly attired. The female has all the colors subdued, the under parts with more of white, and the slaty blue above replaced by brownish.

Closely related to the warblers are the vireos. The most abundant species of this group is the warbling vireo, a plainly attired yet dainty mannered little aristo-

crat in olive gray coat brightening to olive green on the rump. The breast is dull white and the sides have barely a tinge of yellow. The loud sweet carol of this humble minstrel is a feature of the bird choir in the Yosemite, yet the singer seems so busy in his quiet way at gleaning the leaves for food that we wonder he can pause to utter his delightful song.

Despite their plain colors and prosaic manners, we must not overlook the flycatchers,—little fellows with wide snapping beaks, weak feet, and very limited *pee wit* calls. The commonest species is the Western wood pewee, with olive brown back and white under parts, faintly tinged with yellow.

But we cannot expect to make acquaintance with all the birds of the Sierra wilds at one sitting. Patience and loving kindness are the watchwords for those who would be initiated in nature lore. When next you go to the Yosemite you will find the majestic splendor of Titan cliffs and crags humanized and brought closer to your heart by meeting there a host of glad-voiced friends, familiar habitants of this wonder-vale, children of the air and the forests, who will sing to you each his own love song—tender, wild, and shy. And above them all you will listen to the evening hymn of the thrush—not the ethereal hermit of the heights, but the russet-backed thrush of the valleys chanting his soulful and wistful melodies as the purple shadows of the cliffs darken across that valley of enchantment. Then as the pale stars brighten and the dark violet sky deepens to the dusk of night, as the last flutter of joyous wings is stilled, you may think of ten thousand mothers fondly brooding over their swinging cradles in the pines as the night wind croons them a lullaby, each with her little lover close beside her, trustfully sleeping in all that wilderness and taking no thought of the fears of the morrow. Ah little mothers of the pines, you and your blessed mates are the world's most eloquent teachers for those who will but go to you and look and listen, for you are forever preaching the eternal gospel of love.

AN EASTERNER'S IMPRESSIONS OF A SIERRA CLUB OUTING.

By Francis M. Fultz.

As a newcomer I had great curiosity to know what manner of folk the Outing Party would be composed of. Would they be a sociable lot? Would they welcome a stranger who had come a couple of thousand miles to thrust himself among them? Would they be mostly pedagogues (I am one myself, although you might never know it) who were going out to catalogue the flowers and trees, to chase butterflies, and to stalk glaciers to their lairs? Or would they be business people who were running off to the mountains where telegrams and demands for overdue orders could not reach them? Would they all be fishermen? (I work at the business some myself, and I did n't like to think of there being one hundred and forty-nine others intensely interested in the same line of sport. I thought perhaps there might not be enough trout to go 'round.) Would there be many women in the crowd (*there were*), and how independent of help would they be? These and a thousand other questions thrust themselves upon me, and left me in a state of great expectancy. A month with the Outing Party answered all the questions, quieted my curiosity, and left me immensely satisfied.

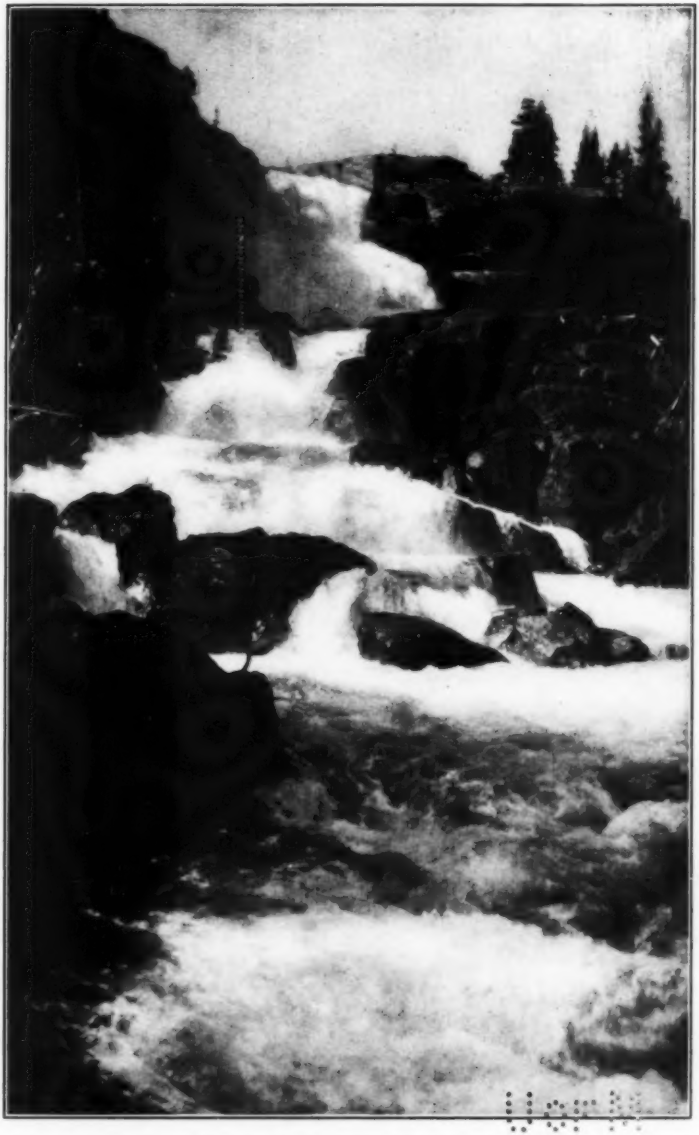
I found the party made up of sociable people who fell naturally into the unconventionalities of camp life, and who met one with that frank and hearty manner that makes getting acquainted easy, and that causes one to feel that one's friendship is considered a favor. Everybody was ready to get acquainted with everybody else, and eager to add in every possible way to the pleasure of the Outing. This was especially true of those who were older members of the Club, and who had been on

previous Outings. Their knowledge of camp life and practices, as well as acquaintanceship with the region, was of much service to the new members, and was freely offered at all times. I gratefully remember advice and information that thus came to me, and which saved me unnecessary pain and hardship.

I was impressed with the orderliness and lack of confusion with which the Outing was conducted. It is no small task to provide during a whole month for one hundred and fifty people, part of the time on the march and the remainder of the time in camp in the mountains at a distance from the base of supplies and where everything has to be transported by pack-train. Yet the commissary was well supplied at all times and there was but little delay in bringing forward the baggage.

I was pleased beyond expression at the opportunities offered to see the region. I was somewhat surprised, too, at the number who came to see. Personally I had expected to do considerable "hiking" and to attempt some climbing of mountains. But I did not expect to see a party of some sixty or seventy stringing out over the snow-fields and climbing the passes at eleven thousand feet, as happened on the Merced trip. I saw much more of the High Sierra than I thought was possible in the time allotted, a result only attributable to the previous careful planning of the Outing.

The memories of the knapsack trips are imperishable. I shall ever see the basin of the Upper Merced, lying white in the moonlight, and the falls of Foerster Creek, breaking into showers of silver beads; and the vision of Ritter, guarded on one flank by Banner Mountain and on the other by the Minarets, as we saw them that first time when we reached the ridge at Foerster Mountain, will ever rise to greet me! And the roar of the Tuolumne I shall still hear when the memories of other sounds shall fail! And then the comradeship, begotten by the close association, where it was the first thought of every one to be of service to everybody else, where every one



FALLS AT THE HEAD OF TUOLUMNE CAÑON.

Copyright, 1908, by F. M. Fultz.

helped, and where every one wanted to do more than his own share of the work! It is all unforgettable!

The camp-fire was an interesting and enjoyable occasion. The nightly gathering in the log amphitheater around the blazing fire to hear the announcement of plans for the morrow, or to listen to story and song, was looked forward to with anticipation and pleasure. And when we were all gathered in, and the great square of illuminated faces appeared against the black background of the forest, what a unique spectacle was presented!

And such opportunities as there were for studying the flora, fauna, and physiography of the region. The specialists could easily be forgiven the zeal with which they pursued their special lines of research, and should not be blamed that their enthusiasm became contagious and infected the party so universally that tree-lore, glacier-movements, and Nature's secrets generally threatened to become the commonest kind of knowledge.

A host of other things press forward for recognition: The Yosemite, the Hoffman and Dana trips, the Mono region, Tuolumne Meadows, the Hetch-Hetchy, the trout-fishing, and so on through a long list, each one adding its quota to make the month an eventful period, unexcelled in mountain experience. But I refrain from continuing, lest I tire the reader through my effusiveness.

> May we all meet again,
> Where mountain, forest, waterfall, and glen
> Of the Sierra call us from the strife
> Of business and the petty cares of life,
> Far from the noisy, restless haunts of men,—
> May we all meet again!

BURLINGTON, IOWA, November 27, 1907.

INDIAN PICTOGRAPHS IN PATE VALLEY.

By E. W. Harnden.

These Indian pictographs were found on the 1907 Sierra Club Outing by Mr. McKibben and myself on the northern side of Pate Valley, midway in the Tuolumne Cañon. No. 1 is taken from a point about ten minutes in from the Tuolumne River, following Piute Creek and reaching the edge of the inner meadow, looking north. The inscriptions were found on face of cliff rising from meadow, at left of picture, west of some large oaks, the cliff fronting east of southeast. The markings were incised, probably with obsidian, fragments of which were lying about, and were colored with a red ochre or pigment. While the designs seemed to stand out boldly in but a few places, examination showed that they had probably been worked into the cliff for one hundred feet or more, from the ground to a height of ten or twelve feet, but had been in many places almost or entirely obliterated by weathering or scaling of the granite face. They appeared to be quite old.

At about the middle of the inscribed face was a shallow, somewhat irregular chamber in the rock, seeming to follow lines of cleavage with side recesses where one could retire or conceal himself from view—perhaps a partly natural cave, added to and amplified by man.

In a horizontal rock in front of the cave was sunken a mortar hole several inches in diameter, and close by was a stone pestle fourteen or fifteen inches long, which seemed slightly stained on the end—either from weathering or because it was used in grinding color.

The markings in No. 2 are to the left of the cave, near the ground.

The markings in No. 3 are to the right of the cave.

Boston.

INDIAN CLIFF, PATE VALLEY.

INDIAN PICTOGRAPHS, PATE VALLEY.

From photographs by E. W. Harnden, 1907.

INDIAN PICTOGRAPHS, PATE VALLEY.

From photograph by E. W. Harnden, 1907.

[The modest notes by the discoverers of these interesting ethnological records hardly indicate the importance of the find. None has heretofore been found in either the Tuolumne or Merced drainage areas; so that this discovery establishes a new northern limit for these pictorial writings. An authority on anthropology, who has seen these photographs, writes concerning them as follows:

"Nothing can be told you of the significance of the characters contained. Such markings are found pretty well over the southern part of the State. In no case do the present Indians know their origin or meaning. In some cases at least they have myths about them,—that they were made by supernatural beings. Fog-maiden was thought to have made one such set of marks. The Indians of this region do not make representations of natural objects as do the Indians of the Plains. In my opinion, the explanation of them, if they are in any way significant, is likely to be connected with some important enumeration or calendar-keeping. Some attempts have been made to explain them as the results of implement-making. The easy way out is to call such things ceremonial, but the chances are that the ceremonial use is secondary, resulting from a loss of practical use or significance."—EDITOR.]

SIERRA CLUB BULLETIN.

PUBLISHED JANUARY AND JUNE OF EACH YEAR.

Published for Members. Annual Dues, $3.00.

The purposes of the Club are:—"To explore, enjoy, and render accessible the mountain regions of the Pacific Coast; to publish authentic information concerning them; to enlist the support and co-operation of the people and the Government in preserving the forests and other natural features of the Sierra Nevada Mountains."

ORGANIZATION FOR THE YEAR 1907-1908.

Board of Directors.

Mr. JOHN MUIR (Martinez).....*President*
Prof. A. G. MCADIE (Merchants' Exch. Bldg., S. F.), *Vice-President*
Prof. J. N. LE CONTE (Berkeley).....*Treasurer*
Mr. WM. E. COLBY (Mills Building, San Francisco)..*Secretary*
Prof. WILLIAM FREDERIC BADÈ (Berkeley).
Prof. GEORGE DAVIDSON (2221 Washington St., S. F.).
Prof. W. R. DUDLEY (Stanford University).
Mr. WARREN OLNEY (Oakland).
Mr. EDWARD T. PARSONS (University Club, S. F.).

Honorary Vice-Presidents.

Prof. GEORGE DAVIDSON (San Francisco).
Mr. R. U. JOHNSON (*The Century*, New York).
Pres. DAVID STARR JORDAN (Stanford University).
Mr. GIFFORD PINCHOT (Washington, D. C.).

Committee on Publications.

Mr. ELLIOTT MCALLISTER (Union Trust Bldg., S. F.).....*Editor*
Prof. WILLIAM FREDERIC BADÈ (Berkeley).....*Book Reviews*
Mr. G. B. LULL, State Forester (Sacramento)....*Forestry Notes*
Mr. ALEX. G. EELLS.
Mr. J. S. HUTCHINSON, JR.
Mr. EDWARD T. PARSONS.
Prof. H. W. ROLFE (Stanford University).
Mr. WILLOUGHBY RODMAN (Los Angeles).
Prof. J. E. CHURCH, JR. (Reno, Nevada).

Auditing Committee—Directors MCADIE, BADÈ, and DUDLEY.

Outing Committee—Mr. WM. E. COLBY (*Chairman*), Mr. J. N. LE CONTE, Mr. EDWARD T. PARSONS.

Committee on Local Walks—Mr. J. H. CUTTER (*Chairman*), Mr. GEO. M. CUMMING, Mr. HAROLD FRENCH, Mr. E. J. MOTT, Miss LENA REDINGTON.

Le Conte Memorial Lodge Committee—Mr. E. T. PARSONS (*Chairman*), Prof. WM. F. BADÈ, Prof. J. N. LE CONTE.

Librarian—Miss ANITA GOMPERTZ.

REPORTS.

REPORT OF THE OUTING COMMITTEE.

The Outing of 1907 stands out as the most successful the Club has ever undertaken. The executive details, including the transportation and pack-train problems, and the management of the commissary, were as nearly perfect as it is possible to make them. The glorious scenery—including, as it did, the peerless Yosemite Valley, the emerald, flower-enameled Tuolumne Meadows, encircled by picturesque groups of snow-clad peaks, and the beautiful gem-like Hetch-Hetchy Valley,—made a trip that cannot be excelled anywhere in the world. The entire party of one hundred and fifty was complete some time before the date of departure. A side trip to the wonderful Merced Cañon region with its two mountain gems, lakes Merced and Washburn, was taken by more than one half the entire party.

A knapsack party of fifteen left the camp in Merced Cañon, and, crossing the North Fork of the San Joaquin River, climbed Mt. Ritter from the west. Another party of five had climbed the mountain from the east only a day or two previous. Many members of the main outing party climbed Mts. Lyell, Dana, and Hoffman, and crossed the crest of the Sierra, descending to Lake Mono and the vicinity of the volcanic craters. The great fall of snow and the lateness of the season made the mountains more than ordinarily picturesque; and all the waterfalls were in their prime. Two knapsack parties, numbering twenty-eight in all, made the famous trip from the Tuolumne Meadows down to Hetch-Hetchy Valley, where they rejoined the main party.

The completion of the Yosemite Valley Railroad to El Portal, only a short distance from the lower end of the valley, eliminated the long, tiresome stage ride, and it is now an easy matter to visit either the Tuolumne Meadows or Hetch-Hetchy Valley, compared with the difficulties presented by these trips in the past.

The members of the party were unusually congenial, and the spirit manifested throughout the entire Outing was splendid. We had the rare pleasure of John Muir's companionship during the earlier days of the Outing.

The trip was singularly free from accidents, as have been all of the Annual Outings. The only occurrence that tended to detract from the care-free joy of the party was the sad death of Mr. Arthur D. Smith in Yosemite Valley, after he had left

the main camp in the Tuolumne Meadows. Under the circumstances, there was nothing the Club could have done to have prevented this, for every member of the party would gladly have done everything in his power in the way of rendering assistance, had Mr. Smith's condition been known. The Club has lost one of its most genial members, who was beloved and respected by all who knew him.

In spite of the heavy expense of hiring a large pack-train, which was continuously at the disposal of the party, a sufficient balance was left to provide for the preliminary expenses of the coming Outing.

The plans and preparations for the 1908 Outing are rapidly progressing. We expect the coming summer's Outing to be as nearly perfect as past experience in transportation and commissary problems can make it. We will visit the Kern Cañon and lakes, via Porterville and Springville—climb the Kaweahs and Mts. Whitney (the highest mountain in the United States proper), Tyndall, and Williamson; explore the Big Arroyo and Kern Kaweah, returning to the Giant Forest via Alta Meadows. The trout fishing will be the best in the world, the camping unsurpassed, and the scenery a source of joy for artists or mountain lovers. The interest already shown in this trip indicates that it will be one of the most delightful yet undertaken. Complete information concerning it will be contained in the Outing Announcement to be issued shortly.

Respectfully submitted,

WM. E. COLBY, *Chairman,*
J. N. LE CONTE,
E. T. PARSONS,
Outing Committee.

TO THE HONORABLE SECRETARY OF THE INTERIOR,
Washington, D. C.

Sir: The Sierra Club begs to submit the following suggestions as to road-building and other needed improvements in Yosemite National Park:—

I. That a general plan for the treatment of the floor of Yosemite Valley be made by a competent landscape artist and carried out under his supervision, at a cost of about one hundred and fifty thousand dollars. This would include the thinning and clearing of undergrowth jungles; the building of a permanent system of roads located with reference to scenery, esthetic effects, etc., instead of the present haphazard dust, sand, and mud ruts

called roads; and the restoration of the down-trodden herbaceous vegetation to something like the beauty of wildness, etc.

II. That a road be built into Hetch-Hetchy Valley connecting with the present wagon-road which now terminates at a distance of about nine miles from the lower end of the valley. Government engineers have estimated that the cost of such a road would be about fifteen thousand dollars. Next to Yosemite itself, Hetch-Hetchy is the greatest attraction in the park, and will be visited by countless thousands when once made easily accessible.

III. That all private holdings within the park be extinguished by purchase or condemnation. Perhaps the most important of these is the old Tioga Road, which follows up the main dividing ridge between the Tuolumne and Merced rivers into the Tuolumne Meadows, thus opening the central part of the park to tourist travel. It was built by a mining company, but has long been out of repair. It could probably be purchased and put in good condition for much less than the original cost.

IV. That a trail be built from Yosemite Valley leading directly up the cañon of the Merced River to its headwaters, thence into the Tuolumne Meadows and down the Grand Cañon of the Tuolumne to the Hetch-Hetchy Valley. The cost would be considerable, but it would be justified over and over again by bringing to view the most sublime and beautiful cañon scenery of the Sierra or the world.

V. A trail built directly up the Tenaya Cañon from Yosemite Valley to Lake Tenaya would enable travelers to reach the eastern portion of the park much more directly and earlier in the year. While a great deal of blasting will be required, this trail could probably be built for fifteen thousand dollars.

It will require an appropriation of at least two hundred and fifty thousand dollars to effect the improvements suggested, and we respectfully urge that such an appropriation be made.

Respectfully submitted,

(Signed:) JOHN MUIR, *President,*
WM. E. COLBY, *Secretary,*
J. N. LE CONTE, *Treasurer,*
WM. F. BADÈ,
E. T. PARSONS,
Committee of Board of Directors of the Sierra Club on Welfare and Improvement of the Yosemite National Park.

THE HETCH-HETCHY WATER PROJECT.

SAN FRANCISCO, September 20, 1907.

REPORT OF THE SIERRA CLUB COMMITTEE APPOINTED BY THE PRESIDENT AT A MEETING OF THE DIRECTORS HELD IN SAN FRANCISCO AUGUST 31, 1907.

WHEREAS, The Yosemite National Park was created by an act of Congress, October 8, 1890, in order that the unrivaled aggregation of scenic features of this great natural wonderland should be preserved in pure wildness for all time for the benefit of the entire nation; and

WHEREAS, An application has been made to this department by certain local interests to utilize Hetch-Hetchy Valley as a reservoir site for the purpose of obtaining a municipal water-supply for the city of San Francisco, and thus flooding the entire floor of the valley;

WHEREAS, Hetch-Hetchy Valley, far from being "a common meadow," "a minor feature," as claimed by applicants, is a counterpart of Yosemite and a great and wonderful feature of the Park, next to Yosemite in beauty, grandeur, and importance;

WHEREAS, The floor of Hetch-Hetchy, like that of Yosemite, is a beautiful landscape park diversified by magnificent groves, gardens, and flowery meadows in charming combinations specially adapted for pleasure-camping; and

WHEREAS, This wonderful valley is the focus of pleasure-travel in the large surrounding area of the Park, and all the trails from both the south and the north lead into and through this magnificent campground, and though now accessible only by trails, it is visited by large numbers of campers and travelers every summer, and after a wagon-road has been made into it, and its wonders become better known, it will be visited by countless thousands of admiring travelers from all parts of the world;

WHEREAS, If dammed and submerged one hundred and seventy-five feet deep, as proposed, Hetch-Hetchy would be rendered utterly inaccessible for travel, since no road could be built around the borders of the reservoir without tunneling through solid granite cliffs; and

WHEREAS, These campgrounds would be destroyed and access to other important places to the north and south of the valley interfered with, and the High Sierra gateway of the sublime Tuolumne Cañon leading up to the grand Central Campground of the Upper Tuolumne Valley would be completely blocked and closed; and

WHEREAS, No greater damage could be done to the great National Park, excepting the damming of Yosemite itself; and

WHEREAS, All of the arguments advanced in favor of making Hetch-Hetchy into a reservoir could be made to apply with equal force to the case of making Yosemite into a reservoir, except that the cost of a dam in the latter case would be greater;

WHEREAS, Such use would, to a great extent, defeat the purpose and nullify the effect of the law creating the Park; and

WHEREAS, The proponents of the San Francisco water scheme desire the use of Hetch-Hetchy, not because water as pure and abundant cannot be obtained elsewhere, but because, as they themselves admit, the cost would be less; and

WHEREAS, We do not believe that the vital interests of the nation at large should be sacrificed and so important a part of its National Park destroyed to save a few dollars for local interests; therefore, be it

Resolved, That we are opposed to the use of Hetch-Hetchy Valley as a reservoir site, and devoutly pray that the application of the San Francisco Board of Supervisors to the Honorable Secretary of the Interior may be denied.

(Signed:) JOHN MUIR, *President*,
WILLIAM E. COLBY, *Secretary*,
J. N. LE CONTE, *Treasurer*,
WM. F. BADÈ,
E. T. PARSONS,
Directors of the Sierra Club.

THE HONORABLE SECRETARY OF THE INTERIOR.
Respectfully submitted.

TO THE EDITOR OF THE SIERRA CLUB BULLETIN.

Dear Sir: A careful canvass discloses that the members of the Sierra Club are almost unanimously opposed to the utilization of Hetch-Hetchy Valley as a reservoir for supplying water to San Francisco. There are a few, however, who hold contrary opinions, and it is only just to these that the reasons, which induced the Committee of the Board of Directors to take the strong stand which they have in opposition to the project, be briefly outlined.

The reserving of the Yosemite National Park was no fortuitous circumstance done without object or reason. It was created because of the wonderful aggregation of natural scenic features existing within its borders "which the Congress of the United States sought by law to preserve for all coming time as nearly as practicable in the condition fashioned by the hand of the

Creator—a worthy object of national pride and a source of healthful pleasure and rest for the thousands of people who may annually sojourn there." John Muir and some of his interested friends started the movement which resulted in this dedication by Congress to the people of the nation. What right, then, has any local community to step in and say, "This water supply and system have been carefully preserved all these years for the benefit of the public, while other available systems have passed into private hands—it will be cheaper to enter this public park and appropriate that which is not privately owned—only because it has been devoted to a public use?" We answer without equivocation, it has no such right where there are other sources of supply available, even if to obtain them will mean increased cost.

That there are other available sources of supply is a fact well established by engineers of great authority, and is admitted by some of the foremost exponents of the Hetch-Hetchy project. It is absurd to maintain that the run-off from the great roof of the Sierra is confined to the Tuolumne watershed. Mr. Marsden Manson's isohyetal lines clearly establish that the annual rainfall increases materially as we go north of the Tuolumne on the Sierra slopes.

Professor C. D. Marx, of Stanford University, in his opening paper read before the Commonwealth Club when the subject of a water supply for San Francisco was being discussed, stated that "It can readily be shown that the drainage area needed for a water supply capable of furnishing 200,000,000 gallons per day can be had on a number of the Sierra streams. . . . That the drainage areas of streams north of the Tuolumne give better promise of meeting these requirements, cannot be denied. . . . It cannot be said that the physical data now available are such as to admit of a reliable comparison of the relative values of the various sources of water supply for San Francisco from the Sierras."

Colonel Mendell, an eminent engineer and authority on water supply systems, prepared an elaborate report on this subject many years ago, and pointed out many available sources from which water for a San Francisco supply could be obtained.

There are several streams north of the Tuolumne, the waters of which analysis shows to be as pure. The storage capacity on some is adequate. The main objection urged is that it will be more expensive to acquire the private rights which exist. In this connection it must be kept in mind that nearly the entire floor of Hetch-Hetchy Valley is held in private ownership, and will have to be purchased or condemned; that there is an association of persons in San Jose who claim to have rights superior to the city of San Francisco; and, finally, that one of the most

powerful organizations of irrigationists to be found anywhere in the areas occupied by any of the available systems is prepared to maintain its rights on the Tuolumne by "fighting to the last ditch."

Water is much more necessary for irrigation within the range of the Tuolumne than it is on the streams further north. The lands in the vicinity of Turlock and Modesto cannot be irrigated unless the water comes from the Tuolumne, while a municipal supply can be secured elsewhere.

The combined flow of Cherry River and Eleanor Creek, with the ample storage facilities on both these streams, is a possible system. The Stanislaus River watershed presents another, and a power company now constructing its system there will shortly be ready to deliver water ample in quantity and equal in purity to that of the Tuolumne. The Mokelumne watershed is also a possible source, as is the Bay Cities system on the Cosumnes and American rivers. The Snow Mountain Power Company, operating on the Eel River, claims that it can deliver water to San Francisco much cheaper than from any other source, including the Hetch-Hetchy. There are other available sources, but I have mentioned enough to indicate that there are many, and careful investigation will doubtless disclose that some one of them may be found as cheap, if not actually less expensive, than would be the cost of the Hetch-Hetchy system.

So much for the question of the necessity of using Hetch-Hetchy. Let us consider for a moment the effect of using the valley for the purpose proposed.

Some people contend that the destruction of the beautiful meadows and groves of Hetch-Hetchy Valley, and the alteration of this natural setting by the creation of a reservoir with its unsightly margin and exposed flats, as will occur in late summer at time of low water, will enhance the beauty of the valley. We do not agree with these zealous enthusiasts, but, be that as it may, it does not answer the fact that Hetch-Hetchy Valley will be rendered less accessible—that camping and living on the floor of the valley will be rendered impossible—and how else can one enjoy to the full its wonderful beauties, which our artist Keith says are, in some respects, even superior to Yosemite? We might as well dam Yosemite to enhance its scenic attractions! Such arguments as these are mere sophistry.

Everyone is not aware of the fact, but it is true that even the Tuolumne Meadows has been included in the proposed reservoir system. It would probably not be necessary to utilize this site for some time, but it will follow as surely as "the night follows the day" that if the precedent of using Hetch-Hetchy Valley for a reservoir is established, sooner or later the Tuolumne Meadows

will be demanded for the same purpose. The invasion of national parks for local reasons is a most dangerous proposition, especially in the absence of a compelling necessity.

If Hetch-Hetchy is to become a source of water supply for San Francisco, it is certain to follow that serious objection will be made to the increase of travel and camping in the park on the headwaters of the Tuolumne. The day is coming when thouands will annually frequent these meadows and the headwaters of the Tuolumne River, and hotels will necessarily be constructed for their accommodation. There will be serious opposition to this proper use of the park on the ground that it will pollute the water supply. All of the streams of other available systems head in forest reserves, and it is beyond question that those sources of supply will be less liable to contamination from an increase of population than will the proposed Hetch-Hetchy system.

The Yosemite National Park means much for the future welfare of California. In time to come the visitors within its borders will number hundreds of thousands, for its attractions are unrivalled in the whole world.

The attitude of the Committee of the Board of Directors is that, since there are other adequate sources of water supply available for San Francisco, it is only just to the nation at large, which is vitally interested in preserving the wonders of the Yosemite National Park, that their destruction or alteration should be avoided if it is possible to do so, as it most certainly is when the question resolves itself into one of mere expense.

Very truly,

WM. E. COLBY.

REPORT OF THE LE CONTE MEMORIAL LODGE COMMITTEE.

During the summer of 1907 the Committee carefully inspected the Lodge with the Custodian, and after consideration recommends that steps for its repair should be taken promptly. The roof in places leaks; the granite stones of which the steps are made are in places loosening; the porch has on it a quantity of loose gravel, which rolls down the steps, making it dangerous to go in or out, especially at night, there being no porch-light; in the chimney and other parts of the building cracks are showing in the cement; and the growing library of books and maps requires some mould-proof and rat-proof receptacle for the winter months. There is no water in the building, and in case of fire there would be no possibility of saving the structure. A

moderate outlay will correct these defects, and the building is otherwise unimpaired.

Upon due authorization the Committee will take necessary action on the foregoing.

The furniture of the Lodge is inadequate and not of fitting style. One of our esteemed members has subscribed one hundred dollars toward a fund for the refurnishing of the Lodge, and further subscriptions to this refurnishing fund are solicited. The Committee believes that two hundred and fifty or three hundred dollars would suitably furnish the Lodge in a substantial manner.

The library is growing, but many books are needed to cover the territory of the High Sierra and give information called for by visitors. From the subjoined list of books now in the library its lacks can be noted, and donations of suitable books are requested from members and friends. The growing interest in the Lodge and its increasing significance is shown by the great registration of visitors for the past season.

The Committee takes pleasure in including in its report the following from the Custodian for the season of 1907:—

TO THE LE CONTE MEMORIAL LODGE COMMITTEE.

The Le Conte Memorial Lodge first opened for the season of 1907 on May 28th, and almost before the door swung back on its hinges there were people ready to partake of the Sierra Club's friendliness. The building was open daily, except Sunday, from 9 A. M. to 9 P. M., and during the entire time of two and one half months it was well patronized by the friends of the Club. In the months of June and July the Camera Club (in two sections), the Sierra Club and its Eastern friends, also excursions of teachers from the N. E. A. Convention in Los Angeles, besides the usual amount of traffic and the added amount due to the now easy access to the valley, made this season remarkable for the number of visitors During the latter part of July and the first part of August travel began to fall off and gradually lessen till the daily number of new visitors to the Lodge fell from fifty to ten, the greatest day's registration being ninety and the least five. During the time of the Club's camp in the valley a number of camp-fires and informal Club meetings with their attendant announcements and characteristic programmes were held in front of the Lodge.

On the afternoon and evening of July 18th, at the suggestion of Mr. Charles Greene, of the Oakland Public Library, a flower exhibit of the wild flowers in the valley and vicinity and the commoner trees and shrubs was conducted in the Lodge. One hundred and eighty varieties, including flowers and ferns, trees

and shrubs, were shown. The thanks of the Club are due Miss Ora Boring, of the Stockton High School, and her helpers for their untiring work in the classification and grouping of the species. In the evening the exhibit was opened by Mr. Greene with a few words about Dr. Le Conte, the Yosemite Valley, and the Sierra Club, followed by a poem "To Joseph Le Conte," read by the author, Mr. Charles Keeler, who concluded with a short talk fitting the occasion. The following poster and list of flowers will be a better account of the exhibit than can be put into words:—

WILD FLOWER SHOW

Thursday { *2:00 – 6:00* / *7:00 – 10:00* } *p.m.*

Flowers and receptacles for displaying same will be acceptable. In gathering flowers it is desired to have a few perfect specimens rather than a great quantity. People who are on the trails the day before could add greatly to the exhibit if they bring down some varieties from the heights. People able to classify the flowers are cordially invited to do so Thursday morning.

N.B.—As far as possible donations should be in Wednesday night and Thursday morning.

YOSEMITE FLOWERS.

[Compiled by Miss Ora Boring.]

July, 1907.

Lily Family.

1. Swamp Onion (Allium validum).
2. Cluster Lilies (Brodiæa grandiflora).
3. Golden Stars (Calliprora scabra).
4. Large Purple Stars (Eagle Peak Meadows).
5. Alpine Tiger-Lily (Lilium pardalinum parviflorum).
6. Butterfly Tulip (Calochortus venustus).
7. Poison Zygadene (Zygadenus venenosus).
8. False Hellebore (Veratrum Californicum).
9. False Solomon's Seal (Smilacina sessiliflora).
10. Pussy Ears (Calochortus Maweanus).

Iris Family.

1. Blue-eyed Grass (Sisyrinchium occidentale).
2. ——— ——— (S. bellum).

Orchid Family.

1. Rein-Orchis (Habenaria leucostachys).
2. Ladies' Tresses (Spiranthes Romanzoffianum).
3. Coral Root (Corallorhiza Bigelovii).
4. False Lady-Slipper (Epipactis gigantea).

Buckwheat Family.

1. Mountain Dock (Rumex Geyeri, Trelease).

2. Pussy Tails (Polygonum bistortoides).
3. Buckwheat (Eriogonum nudum).
4. Sulphur Flower (E. umbellatum —Cloud's Rest—low and flat).

Pink Family.

1. Starry Chickweed (Stellaria longipes).

Portulaca Family.

1. Miner's Lettuce (Montia perfoliata).
2. Pussy-Paws (Spraguea umbellata, Torr.—Calyptridium, Nutt.).
3. Lewisia rediviva (Sentinel Dome).

Buttercup Family.

1. Meadow Rue (Thalictrum sparsiflorum).
2. —(?)— (Thalictrum —(?)—)
3. Columbine (Aquilegia truncata).
4. Meadow Larkspur (Delphinium pratense).
5. Buttercup (Ranunculus alismæfolius).

Mustard Family.

1. Lace-pod (Thysanocarpus curvipes).
2. Tower mustard (Arabis perfoliata).
3. Jewel Weed (Streptanthus gracilis).
4. Wild Wall-Flower (Erysimum asperum).
5. Pepper Grass (Lepidum).

St. John's-wort Family.

1. St. John's-wort (Hypericum Scoulin).
2. Dwarf St. John's-wort) Hypericum anagalloides).

Violet Family.

1. White Violet (Viola blanda).
2. Yellow Pansy (Viola pedunculata).
3. Yellow Violet (Viola lobata).
4. Blue Violet (Viola —(?)—).

Geranium Family.

1. Crane's-Bill (Geranium incisum).
2. White Bill (Geranium Richardsonii).

California Lilac Family.

1. Coffee Berry (Rhamnus Californica—Cascara sagrada).
2. California White Lilac (Ceanothus integerrimus).
3. Snow-Bush (C. cordulatus).

Stonecrop Family.

1. Stonecrop (Sedum stenopetalum).
2. Cotyledon (Dudleya Sheldoni).
3. —— (Cotyledon Sheldoni).

Saxifrage Family.

1. Meadow Saxifrage (Saxifrage integrifolia).
2. Alpine Saxifrage (Saxifrage nivalis).
3. Wood-Star (Tellima scabrella).
4. Alum-Root (Heuchera micrantha).
5. Syringa (Philadelphus).
5. Syringa (H., new species—Hopkins Meadows, larger blossoms).
6. Prickly Gooseberry (Ribes amictum).
7. Wild Currant (Ribes ascendens).

Rose Family.

1. Wild Cherry (Cerasus emarginata).
2. Service Berry (Amelanchier alnifolia).
3. Black Raspberry (Rubus leucodonis).
4. Thimble Berry (Rubus parviflorus).
5. White Spiræa (Holodiscus dumosa—Meadow Sweet).
6. Pink Spiræa (Spiræa lucida).
7. Wood Rose (Rosa spithamea).
8. Wild Rose (Rosa Gratissima).
9. Wild Strawberry (Fragoria sibbaldifolia).
10. Silver Weed (Potentilla flabellifolia—Cinque Foil).
11. Cream-colored Silver Weed (Potentilla Nutalli).
12. Pale Yellowish Silver Weed (Potentilla lactea).
13. Horkelia (Horkelia tridentata).

Pea Family.

1. Purple Lupine (Lupinus Chamisonus).
2. Alpine Fern (Low and flat, with silky foliage).
3. Red Clover (Trifolium microcephalum).
4. Yellow and White Lotus (Lotus bicolor—Torrey).
5. Yellow- and Rose-colored Lotus (Lotus gracilis).
6. Spanish Clover (L. Americanus, flesh color).
7. Giant Lotus (Lotus crassifolius).
8. Wild Pea (Hosackia Ericola).

Evening Primrose Family.

1. Fire Weed (Epilobium Watsonii).
2. —— (Epilobium brevistylum).
3. Evening Primrose (Œnothera biennis).
4. Small Yellow Œnothera.
5. Small Pink Œnothera.
6. Godetia (Godetia pulcherrima).

Parsley Family.

1. Sweet Cicely (Osmorrhiza nuda).
2. Poison Hemlock (Conium maculatum).
3. Ginseng (Aralia Californica—Spikenard).

Dogwood Family.

1. Dogwood (Cornus Nuttalli).
2. Dogwood (Cornus occidentalis).

Mistletoe Family.

1. Pine mistletoe (Razoumofskya occidentalis).

Heath Family.

1. Manzanita (Arctostaphylos Mariposa).
2. Alpine Heather (Bryanthus Breweri).
3. Azalea (Rhododendron occidentale).
4. Rose-colored Shin-Leaf (Pyrola picta).
5. White Shin-Leaf (Pyrola picta pallida).
6. Pine Drops (Pterospora andromedea).
7. Snow Plant (Sarcodes sanguinea).
8. Labrador Tea (Ledum glandulosum).

Primrose Family.

1. Mountain Primrose (Primula suffrutescens).
2. Mosquito Bills (Dodecatheon alpinum).

Gentian Family.

1. Canchalagua (Erythrea venusta).

Dogbane Family.

1. Dogbane (Apocynum pumilum).

Milkweed Family.

1. Silk Weed (Asclepias speciosa).
2. Mexican Milkweed (A. Mexicana).
3. Purple Milkweed (Gomphocarpus cordifolius).

Morning-Glory Family.

1. Dodder (Cuscuta subinclusa).

Nightshade Family.

1. Nightshade (Solanum Xanti).

Figwort Family.

1. Innocence (Collinsia tinctoria).
2. California Bee Plant (Scrophularia Californica).
3. Pink Pentstemon (P. Newberryi).
4. ——— (P. brevifloris).
5. Violet Beard-tongue (P. laetus).
6. Scarlet Bugler (P. laetus).
7. Purple Beard-tongue (P. procerus).
8. Indian Paint-Brush (Castilleia Montana).
9. Yellow Paint-Brush (Castilleia (?).
10. Pink Monkey Flower (Mimulus Lewisii).
11. Small Purple Mimulus (Mimulus Bolanderi).
12. Primrose Mimulus (Mimulus primuloides).
13. Musk-Plant (Mimulus moschatus).
14. Speedwell (Veronica serpyllifolia).
15. Cancer Root (Aphyllon fasciculatum—Naked Broom-Root).
16. White Owl's Clover (Orthocarpus purpurascens).
17. Yellow Owl's Clover.

Phlox Family.

1. Wild Bovardia (Gilia grandiflora).
2. Scarlet Gilia (Gilia aggregata).
3. Pale Blue Gilia (Gilia Achilleæfolia).
4. ——— (Linanthus montanus).
5. ——— (Linanthus bicolor).
6. Alpine Snow (Phlox Douglasia).
7. Mountain Verbena (Polemonium eximium).

Baby-Eyes Family.

1. Water Leaf (Phacelia hydrophylloides).
2. ——— (Phacelia mutabillis).
3. Stinging Phacelia (Phacelia stimulans).

Borage Family.

1. Hound's Tongue (Cynoglossum grande).
2. Mountain Forget-me-not (Lappula diffusa).
3. Pop-Corn Flower (Plagiobothrys Torreyi).

Mint Family.

1. Pennyroyal (Monardella odoratissima).
2. Horse-mint (Lophanthus urticifolius).
3. Brunella or Self Heal.

Madder Family.

1. Goose Grass or Bed Straw (Galium tinctorium).
2. White Bed Straw (Galium triflorum).

Honeysuckle Family.

1. Twinberry (Lonicera involucrata).
2. Yellow Honeysuckle (Lonicera interrupta).
3. Elder (Sambucus glauca).

Harebell Family.

1. Cream-colored Harebell.

Sunflower Family. Compositæ.

1. Sow-thistle.
2. Aster (Aster Andersonii).
3. Purple Mountain Daisy (Erigeron salsuginosus).
4. Tall White Daisy with many fine rays.
5. Golden-Rod (Solidago).
6. Layia.
7. Madia or Tar Weed.
8. Sun Flower (Helianthus Californicus).
9. Rag Weed (Ambrosia).
10. Everlasting Flower (Gnaphalium).
11. Papery Everlasting (Soft open flowers, larger than other).
12. Lessingia leptoclada.
13. Yarrow Milfoil (Achillea millefolium).
14. Brown-eyed Susan.
15. Dog Fennel.

Water-Leaf Family, or Baby-Eyes (Vide).

1. Yerba Santa (Eriodictyon Californicum).

Sumach Family (Poison Oak).

1. Poison Oak (Rhus diversiloba).

Pipe-Vine Family.

1. Ginger Root (Asarum caudatum).

Water Lily Family.

1. Yellow Pond-Lily (Nuphar polysepalum).

Oaks.

1. Maul Oak, Golden-Leaf Oak (Quercus chrysolepus).
2. Black Oak.

Poplar.

1. Cottonwood (Populus).

Maple.

1. California Maple.
2. Oregon Maple (Acer macrophyllum).

Willow.

1. Salix.

Conifers.

1. Sugar Pine.
2. Yellow Pine.
3. Tamarack Pine.
4. Jeffrey Pine.
5. Monophilla.
6. Douglas Spruce.
7. Williamson Spruce.
8. White Fir.
9. Red Fir.
10. California Juniper.

Ferns.

1. Rock Fern (Cheilanthes).
2. ——— (Aspidium).

Beginning with the *Oaks*, this list is incomplete; also in indicated places above this point.

As a result of the exhibit, the Lodge now has a very fair collection of pressed flowers ready for mounting and putting into such a form that it may be easily consulted for identification by those interested. The lively interest taken in the affair should urge its repetition during coming seasons.

LIST OF BOOKS IN THE LODGE LIBRARY AUGUST 11, 1907.

Holy Bible.
Poems and Hymns.
Autobiography of Joseph Le Conte. Armes. Berkeley edition.
Elements of Geology. Le Conte.
Bird Notes Afield. Keeler.
Birds of California. Wheelock.
Our National Parks. Muir.
The Mountains of California. Muir.
Mountaineering in the Sierra Nevada. Clarence King.
Big Trees of California. Clark. 2 copies.
Indians of the Yosemite. Clark.
The Kindred of the Wild. Roberts.
Hunting in Many Lands. Boone and Crockett Club.
American Big Game in Its Haunts. Boone and Crockett Club.
Our Lost Explorers of the Jeannette Arctic Expedition.
Mountain Exploration. Balch.
Bibliography of the Geology, etc., of California.
Structural and Industrial Materials of California.
Copper Resources of California.
Petroleum in California.
Gold Dredging in California.
The Yosemite Valley. Hutchings.
The Modern Speech New Testament. Weymouth.

U. S. Geological Survey, 1886-1887, Part I.
U. S. Geological Survey West of 100th Meridian, Part III, 1881.
Grand Cañon of the Colorado River. Higgins.
A Flora of the South Fork of King's River. Eastwood. 2 copies.
My Trip to King's River Cañon. Le Conte. 2 copies.
Conifers of the Pacific Slope, No. III. Lemmon. 2 copies.
The Geomorphogeny of the Upper Kern Basin. Lawson.

The committee is indebted to the following:—

Major H. C. Benson—for his courtesy and aid in everything pertaining to the welfare of the Club, and for a map of Yosemite Valley and one of the Mariposa Big Tree Grant.
Mr. James Mills—Collection of mounted flowers; the Modern Speech Testament (Weymouth).
D. J. Foley—Book of Views of Yosemite Valley; Anderson Spike from Half Dome.
Mr. Fiske—Four winter scenes of the valley, mounted.
Mr. Galen Clark—Two copies Big Trees of California (Clark).
Lewis E. Aubury, State Mineralogist—Bulletins 23, 30, 31, 32. 36, 38, 42, 43, 44; Maps and Register, Mariposa-Tuolumne; Relief Map and Mineral Map of California; Forest Reserve Map of California.
Mrs. R. H. Simonds—Bird Notes Afield (Keeler).
Dr. G. K. Gilbert—Map of Yosemite, advance sheet.
Miss Ora Boring—Collection of pressed flowers.
The Pacific Monthly Publishing Company—*Pacific Monthly* for the summer months.

The Memorial Bronze of Dr. Le Conte has been fittingly placed in the Lodge.

The Lodge closed for the season on August 11, 1907, with a registration of approximately two thousand names.

Very respectfully,

KATE R. GOMPERTZ, *Custodian.*

Respectfully submitted,

E. T. PARSONS, *Chairman,*
WM. F. BADÉ,
J. N. LE CONTE,
Le Conte Memorial Lodge Committee.

NOTES AND CORRESPONDENCE.

In addition to longer articles suitable for the body of the magazine, the editor would be glad to receive brief memoranda of all noteworthy trips or explorations, together with brief comment and suggestion on any topics of general interest to the Club. Descriptive or narrative articles, or notes concerning the animals, birds, forests, trails, geology, botany, etc., of the mountains, will be acceptable.

The office of the Sierra Club is Room 302 Mills Building, San Francisco, where all Club members are welcome, and where all the maps, photographs, and other records of the Club are kept.

The Club would like to secure additional copies of those numbers of the SIERRA CLUB BULLETIN *which are noted on the back of the cover of this number as being out of print, and we hope any member having extra copies will send them to the Secretary.*

The year that has just passed leaves several empty places in our camp-fire circle. No loss is more deeply and sincerely regretted than that of Mrs. William Frederic Badè, whose sad death, on September 17th, deprived the Club of one of its most talented and charming young women. Those of us who remember her as Miss Mary Ratcliff, on the Outings of 1904 and 1905, grieve not only for the beautiful girl whose brightness, untiring energy, and splendid voice won admiration from the most casual acquaintance; but for the warm-hearted companion, the good comrade, who made many a fair day the fairer by her presence. The summer of 1905 she was one of the few who made the three ascents of the Outing—Mt. Hood, Mt. Rainier, and Mt. Shasta.

The death of Mr. P. A. Kanawyer will be sad news for his many friends in the Club. For many years past he has had charge of the travel between Millwood and the King's River Cañon. His widow, assisted by members of his family, will continue the packtrain and camp-hotel business.

U. S. Geological Survey: On January 18, 1908, the Director recommended and the Secretary of the Interior approved the following changes in the personnel of the Topographic Branch:

Robert B. Marshall, Geographer, formerly in charge of the Pacific Division, to be Chief Geographer.

Thomas G. Gerdine to be Geographer in charge of the Pacific Division.

Newly Discovered Cave in King's River Cañon:—This limestone cave seems to be a discovery of magnitude. A recent exploration by parties from Fresno shows that the cave extends in something over 1,500 feet, and contains some of the most beautiful chambers of stalactites and stalagmites that can be imagined. It is within three hundred feet of the survey of the State road to the cañon.

The Road to King's River Cañon:—The State Engineer writes concerning the progress of this road as follows:—

"We now have the survey built about half a mile beyond the Cedar Grove Hotel, and from the General Grant National Park we have completed the construction work for two miles. Beyond this completed road, we have grubbed out, or brushed, the roadway for three miles, so that early next spring we may continue the work and rush it as far as we can before the snow flies."

Muir Woods:—The above is the official name given to the tract of redwood groves donated by Mr. William Kent for a public park. The tract includes an area of 295 acres, lying on the slope of Mt. Tamalpais. It was deeded to the government with the approval of Chief Forester Gifford Pinchot, and will be cared for by the government as a public park. The trees in these groves consist principally of original growth of Sequoia sempervirens and some Douglas spruce. They are the most accessible of any redwood groves, and are easily reached from San Francisco. In recognition of Mr. Kent's generosity the Board of Directors of the Sierra Club has adopted the following resolution:—

"*Resolved,* That the Sierra Club extend a hearty vote of thanks to Mr. William Kent in testimony of its appreciation of his noble gift to the Federal Government, of the Redwood Cañon on Mt. Tamalpais, with its magnificent primeval groves of Sequoia sempervirens, to be devoted as a public park and pleasure ground to the people forever.

"By order of the Board of Directors."

Mr. Herbert W. Gleason, the noted mountaineer, mountain photographer and lecturer, of Boston, favored the Club with two of his finest lectures on October 4 and 5, 1907. They were delivered at the Masonic Temple in Berkeley. One was entitled, "Alpine Scenery and Wild Flowers of the Cascades and Canadian Rockies"; the other, "In Thoreau's Country."

Probably there is no man who knows the Canadian Alps more thoroughly than Mr. Gleason, and certainly it would be hard to find a more magnificent collection of photographs than he has obtained. The views selected for this series of lectures were the choicest in Mr. Gleason's collection.

In 1905 and in 1906 Mr. Gleason was a member of the famous mountain-climbing excursions of the Sierra Club and the Mazama Club of Oregon, in the former year to Mts. Hood, Rainier, and Shasta, and in the latter year to the unexplored region around Mt. Baker. A large amount of exceedingly interesting material was secured on these trips, the best portion of which was presented in the lecture.

With the idea of reproducing pictorially some of the very scenes and phenomena described by Thoreau, Mr. Gleason made many pilgramages to Concord during the past few years, and has taken several hundred photographs of the actual localities and objects of which Thoreau speaks so familiarly.

The Mountaineers, our fellow mountaineering club of Seattle, have set their outing for July 18th to August 1st, and will visit and climb Mt. Baker and Mt. Shuksan, in the Cascades.

The Mazamas will go to Mt. St. Helens for their outing, some time in July,—date not yet set.

A complete set of the SIERRA CLUB BULLETINS has been collected by our esteemed member, Mr. Charles S. Greene, of the Oakland Public Library, and it will soon be available for reference in the Reference Department of that institution.

BOOK REVIEWS.

EDITED BY WILLIAM FREDERIC BADÈ.

"THE BIG TREES OF CALIFORNIA."

Among the books that have come to the reviewer's table is an interesting little volume by Galen Clark. It is entitled *The Big Trees of California.** Mr. Clark undoubtedly has earned a veteran's right to speak about the Sequoias, for he has known them a long time. For many years he was Guardian of the Yosemite Valley, and he claims to be the first white man who set foot in the Mariposa Grove of Big Trees. The book is abundantly illustrated with good photographs, the frontispiece being one of the author himself. The contents are composed of a dozen thumb-nail sketches under such titles as "Origin of the Big Trees," "Age of the Sequoias," "Habits and Characteristics," "Cones and Seeds," "Celebrated Specimens," etc. No attempt is made to deal with the subject exhaustively, each sketch being studiously brief. The salient facts only are given in form suited particularly to the taste and needs of the tourist, who is bound to find this an exceedingly convenient little manual of information. One is bound to place a question-mark behind the statement on page 58, that Sequoias "catch the electric ether from the atmosphere" as "one of their most vital sources of life." But that is an insignificant matter in a book that has so many merits. Mr. Clark has passed the remarkable age of four score and ten, so that this little book has gathered into itself the loving memories of long years spent among the noblest of all trees. The book seems to have been privately printed, but copies may doubtless be obtained by addressing the author in Yosemite Valley. W. F. B.

"IDLE RHYMES FROM ORECON."

Idle Rhymes from Oregon is the title of a booklet by Mr. C. H. Sholes, who is the president of the brother organization of the Sierra Club in the North, the Mazama Club. The author has gathered into book form his various occasional poems suggested by sights, scenes, and incidents in the mountains. Mr. Sholes exhibits in these products of his pen a keen appreciation of nature. A number of excellent half-tones accompany the "Rhymes." The photograph of the water-ouzel by Gertrude Metcalfe is a notably successful piece of camera work. The pamphlet is limited to two

* *Big Trees of California.* By GALEN CLARK. Yosemite Valley, Cal. Pp. 103, with 20 illustrations.

hundred copies and has been "done into print by the Roycrofters at their shop which is in East Aurora, New York."

W. F. B.

"THE SHAMELESS DIARY OF AN EXPLORER."

At first blush one hardly knows what to make of *The Shameless Diary of an Explorer.*† The book is unique in every way. The author was a member of Professor Cook's party which in 1903 made an unsuccessful attempt to climb Mt. McKinley. In the words of the author "this is the story of a failure. I think that success would have made it no more worth telling. It is about an exploring party, the sort that so often fails." The adjective "shameless" points to the chief characteristic of the book, although it is apparent from the author's defense of his motives in publishing it that he does not intend the adjective to be taken too literally. He professes to give in this diary an absolutely unvarnished account of all that happened during the expedition. He writes, "I started and maintained my record with the sole idea of stating facts as I saw them, emotions as I felt them at their time. . . . Maybe it has been a shameless task. I know that it is without malice. For heaven's sake, do not read these pages with charity."

"If he, the explorer, is pledged to exactitude about his diptera, is he not obliged, in relating human deeds at all, to record as truthfully and in full how the outer waste and the ego of each companion uplifted or scarred his own? If such a record be not as direct, as full, as frank, as his registry in science, by what hypocrisy under the sun has he right to state at all the words or acts of any fellow? . . . I believe that no motives of any sort distort my written record, except the elements of my own temperament and heritages. And I hope that in reporting any inherent vanity in my fellows, I have hit off hardest my own insufferable egotism." This is the author's apology for the contents of his book. The reader soon feels that some such positive assertion of absence of malice is necessary, for Professor Cook and "Simon" come in for a good deal of criticism and disparagement. Yet no one who has once begun the book is likely to lay it aside before he has reached the last page. The author knows how to paint a vivid picture with a few strokes. The reviewer has never read more realistic descriptions of the Alaskan tundra, or of difficulties encountered with pack animals in fording rivers and crossing glaciers. At these points the author's ability rises to the level of genius. There are not a few disfiguring crudities of language and taste, and some things that had better been left unwritten. But when all is said the book is one that will have to

† *The Shameless Diary of an Explorer.* By ROBERT DUNN. The Outing Publishing Company, New York, 1907. Pp. 297, with map and photographs.

be reckoned with by future explorers of the Alaskan wilds. A number of good photographs are scattered through the volume, including a frontispiece of Mt. McKinley. W. F. B.

After reviewing *The Shameless Diary of an Explorer* it is some satisfaction to be able to record the successful first ascent of Mt. McKinley by Professor Frederick A. Cook, M. D., on the sixteenth of September, 1906. An excellent account of the ascent, written by Professor Cook, will be found in *Harper's Monthly Magazine*, May, 1907. The altitude of the mountain was found to be 20,391 feet. Edward Barille made the ascent with Professor Cook. One night they camped in a hole dug into the snow on a sixty-degree slope, and at an altitude of 14,200 feet.

THE ALPINE JOURNAL OF CANADA. This illustrated annual has just been published by the Alpine Club of Canada. In addition to some ten mountaineering articles by climbers of experience, and scientific papers on "Glacier Observations," with maps, there are special contributions by Sir Sandford Fleming, K. C. M. G., on "Journeys Through the Mountains Thirty-seven Years Ago"; by Mr. A. O. Wheeler, F. R. G. S., on "The Canadian Rockies as a Mountaineering Field"; and by Ralph Connor, a humorous sketch of "Amateur Climbing." It is announced that there will be no reprint of this annual,* and that the price will advance as the supply decreases. E. T. P.

ALPINA AMERICANA. The American Alpine Club has begun the publication of a systematic illustrated work presenting monographs of the Alpine Mountains of the Western Hemisphere. The first number was issued early in 1907, and was a masterly presentation of the High Sierra by Professor J. N. Le Conte, a leading authority on this region.

The work will be a handsomely printed quarto, the trimmed page measuring 10½ by 13½ inches. The illustrations will form a striking feature; not only will they be numerous, but many of them of the impressive size permitted by so large a page. So far as the conditions of high Alpine photographing permit, the half-tones will be of the best workmanship. Professor Le Conte's own photographs furnished the beautiful illustrations of the initial number. It also contained a lithograph copy of the author's new map of the Sierra Nevada.

The several numbers of this series will form a volume that no lover of mountains can afford to be without.

* *The Alpine Journal of Canada.* Published by the Alpine Club of Canada, Mrs. H. J. Parker, Secretary, 160 Furby Street, Winnipeg, Man. Vol. I. Price, paper, 75 cts.; cloth, $2.00.

The American Alpine Club has only a very limited membership; but it proposes to spend its funds without stint for this undertaking, expecting no adequate financial return. If compelled, however, to rely chiefly upon the income from membership fees, the issues of so expensive a publication will, of necessity, be rare. Should the enterprise receive from the members of American mountain clubs, such as the Appalachian Mountain Club, the Alpine Club of Canada, the Mazamas, the Mountaineers, and the Sierra Club, and from American geographical societies, the encouragement in the way of subscriptions that it will aspire to deserve, the frequency of issue would be measurably increased.

The price per number to members of these societies will be 35 cents. Members are invited to send to the treasurer of the club, Mr. William S. Vaux, Jr., 807 Bailey Building, Philadelphia, their subscriptions with signature and address, and the amount of the first subscription. E. T. P.

"Round About the North Pole."

A recent addition to our rapidly growing library is *Round About the North Pole*,* by W. J. Gordon, which was presented to the Club by its illustrator, Edward Whymper. The book is an exceedingly interesting history of Arctic exploration. The author has not attempted to deal chronologically with his great mass of material, but has made a separate story of the discovery and exploration of each region. Spitzbergen, Novaya Zemlya, Franz Josef Land, and Greenland are among the countries whose stories are thus chronicled; and the voyagers whose perseverance and heroism are recounted range from Henry Hudson to Nansen. This stirring portrayal of strenuous endeavor throughout the centuries is most thrilling and fascinating, and will charm and delight those who have opportunity to enjoy it. M. R. P.

* *Round About the North Pole.* By W. J. Gordon. Illustrated by Edward Whymper. John Murray, Publisher, London, England. 294 pages, 67 illustrations, 5 maps.

FORESTRY NOTES.

EDITED BY G. B. LULL.

FIFTEENTH NATIONAL IRRIGATION CONGRESS.

Probably no other gathering of industrial interests has been so assiduously and broadly advertised as the Fifteenth National Irrigation Congress, held in Sacramento in September. Forestry was made a special feature, especially in the Interstate Exposition, which was a part of the proceedings. Among the prizes and trophies offered for special exhibits the Diamond Match Company and the Pacific Hardware Company each presented one for the best collective State exhibit of forest products, but most significant was the offering of a trophy by the California Wine Association for a suitable substitute for oak staves, accentuating the growing scarcity of the supply which is coupled by a constant and rapidly increasing demand.

Of special interest to California was the following resolution adopted by the Congress:—

"*Resolved*, That the Fifteenth National Irrigation Congress urges upon the people of California the need of enacting a law giving the State Board of Forestry power to examine all private forest holdings on the watersheds of irrigable streams and to designate and enforce such rules for cutting as in its judgment will secure the continuity of said forests and prevent injury to said streams."

Mr. L. D. Van Rensselaer, of Ithaca, N. Y., advertises insurance against loss from fire of uncut timber and for cut wood lying in the forest.

The State of Washington has entered the number of States providing educational facilities for forestry in connection with the College of Agriculture. Professor W. S. Thornber is in charge.

EUCALYPTUS PLANTING.

That the Santa Fe Railway Company, which purchased a tract of 8,300 acres in San Diego County last year for eucalyptus production, has faith in the value and adaptability of this remarkable genus for railroad use is evinced by the sending of its expert, F. T. Hosp, to Australia to study the eucalyptus in their native habitat, and by the further fact that prominent officials in the company have recently purchased a ranch near Carlsbad for eucalyptus production. This action, which is in line with the policy of many large wood-using concerns, looks toward a supply of material when our rapidly disappearing forests have been exhausted. In less favorable sections these corporations are gradually acquiring and protecting the uncut timber for future

use. In the climatic range of eucalyptus, however, its quick-growing qualities render its propagation for use in the not distant future a feasible proposition.

In practically all parts of California that are climatically suited, interest in planting eucalyptus is growing. To meet inquiries as to the species to plant, planting methods, and probable returns, the State Board of Forestry has prepared a circular for free distribution. This circular will be available by December 20th. Copies may be obtained by addressing the State Forester, Sacramento.

The city of San Bernardino deserves credit for taking an advanced position with regard to its land possessions. Instead of allowing them to lie idle or to serve as grazing commons, the city proposes to plant eucalyptus on them for revenue. The practice is old in European countries, but, so far as known, has never before been followed by a municipality in the United States.

STATE FORESTER AT FARMERS' INSTITUTES. At several of the farmers' institutes held in various parts of northern California recently a new feature of the programme has been talks on forestry by the State Forester. The interest shown in this subject proves the people are awakening to the need of growing trees for fuel, protection, and ornament.

RANGERS' MEETINGS. The forest service, through its inspectors at the San Francisco headquarters, has been holding rangers' meetings recently at several of the national forest headquarters in northern California. These meetings are attended by the local forest officers, supervisors, rangers, and guards. Their object is to increase the efficiency of the service by a discussion of the many-sided problems the officers have to solve, and by establishing intimate relations with the users of the forests.

REDWOOD PARK. The popularity of California Redwood Park in Santa Cruz County, is increasing every year. Since April 1, 1907, the register at the park shows there have been 2,730 visitors. It is estimated, however, that fully ten per cent of the visitors fail to register; so the attendance during the period mentioned has not been less than three thousand. Last year the total number did not exceed eighteen hundred. When the short-line railroad from San Francisco resumes operations, and the long detour via Pajaro is avoided, the number will be much larger.

SPECIAL YOSEMITE NATIONAL PARK NUMBER

PUBLICATIONS OF THE SIERRA CLUB

No. 37

Stanford University Library
MAR
24
1908

SIERRA CLUB BULLETIN

Vol. VI No. 4

JANUARY, 1908

SAN FRANCISCO, CALIFORNIA

1908

SIERRA CLUB BULLETIN

JANUARY, 1908

Vol. VI. No. 4

CONTENTS

THE HETCH-HETCHY VALLEY ..... *John Muir*..... 211
Plates XLVI., XLVII., XLVIII.

TO JOSEPH LE CONTE, A POEM..... *Charles Keeler*..... 223

LAKE RAMPARTS ..... *G. K. Gilbert*..... 225
Plates XLIX., L.

THE GRAND CAÑONS OF THE TUOLUMNE AND THE MERCED ..... *Marion R. Parsons* . 235
Plates LI., LII., LIII., LIV., LV., LVI., LVII.

THE WATER-OUZEL, A POEM..... *C. H. Sholes* 244

PHOTOGRAPH OF THE WATER-OUZEL..... *Gertrude Metcalfe*..
Plate LVIII.

BIRD LIFE OF YOSEMITE PARK..... *Charles Keeler*..... 245

AN EASTERNER'S IMPRESSIONS OF A SIERRA CLUB OUTING ..... *Francis M. Fultz*.... 255
Plate LIX.

INDIAN PICTOGRAPHS IN PATE VALLEY... *E. W. Harnden*..... 258
Plates LX., LXI., LXII.

ORGANIZATION OF SIERRA CLUB 260

REPORTS:

Of Outing Committee 261

To Secretary of Interior on Roads in Yosemite National Park 262

To Secretary of Interior on Hetch-Hetchy Valley Water Project 264

Of Secretary of Sierra Club on Same..... 265

Of Le Conte Memorial Lodge Committee..... 268

NOTES AND CORRESPONDENCE 275

BOOK REVIEWS ..... *Wm. Frederic Badè*. 278

FORESTRY NOTES ..... *G. B. Lull*..... 282

All communications intended for publication by the SIERRA CLUB, and all correspondence concerning such publication, should be addressed to the Editor, Elliott McAllister, Room 302 Mills Building, San Francisco, California.

Correspondence concerning the distribution and sale of the publications of the Club, and concerning its business generally, should be addressed to the Secretary of the Sierra Club, Room 302 Mills Building, San Francisco, California.

CLUB PIN

A VERY ATTRACTIVE SIERRA CLUB PIN

Is on sale at the office of the Secretary. The price in silver is $1.00; and in gold, either as a pin or watch-fob, $3.50. The gold pin is only made to order. Those desiring to have a pin sent by registered mail should send to the Secretary of the Sierra Club ten cents in addition to the above-mentioned price.

CLUB STATIONERY

THE OFFICIAL DIE OF THE SIERRA CLUB

Is now at store of Paul Elder & Co., Van Ness Avenue at Bush Street, who are prepared to execute orders for Club stationery.

MAPS

MAPS OF THE SIERRA NEVADA MOUNTAINS

The three maps of the Sierra Nevada Mountains, hitherto printed as ordinary blue prints, have recently been revised, and are now printed by a new process, as blue lines on white paper. This greatly increases the utility of the maps, as notes and new features can be added by the traveler in pencil. These maps, as before, are three in number: No. 1, The Yosemite National Park; No. 2, The Basin of the San Joaquin River; and No. 3, The Basins of the King's, Kern, and Kaweah rivers.

The price of each of these new maps will be $1.50. The old blue-print maps will not be furnished hereafter.

J. N. LE CONTE.

Address: BERKELEY, CAL.

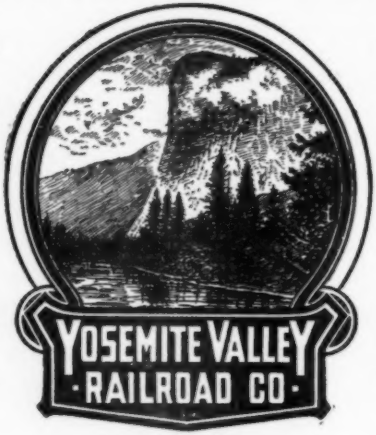
YOSEMITE VALLEY

OPEN TO TOURISTS

WINTER — SUMMER — ALL THE YEAR

Via YOSEMITE VALLEY RAILROAD

YOSEMITE is now reached by Rail QUICK SCENIC CONVENIENT



DAILY Vestibule Train Service to and from YOSEMITE

Connects with

SANTA FE AND SOUTHERN PACIFIC

Going and Returning

Fare only $18.50, Round Trip, from Merced, Cal.

An eighty-mile ride through the picturesque Merced River Canyon. A delightful trip of unequalled diversity. Thousands have seen Yosemite in Summer and attest its grandeur. Those who have seen it in Winter praise it for its enhanced beauties.

Write for information and folders.

O. W. LEHMER, Traffic Manager, . . Merced, Cal.

NOT HOW CHEAP BUT HOW GOOD
IS OUR MOTTO

This policy is carried out in our line of

OUTING GOODS

which includes all the necessaries for an outing expedition

TENTS	SWEATERS
KHAKI CLOTHING	BOOTS AND SHOES
FISHING TACKLE	BLANKETS
LEGGINGS	AIR MATTRESSES

THE KIND THAT SATISFIES

WESTERN HARDWARE & ARMS CO.
530-532 S. Spring Street, Los Angeles

PHONE OAKLAND 194—HOME PHONE A4194

WHITE-WALLACE CO., Inc.

FLAGS AND SIGNALS

Awnings—Tents—Covers

CANOPIES AND CANVAS WORK
OF EVERY DESCRIPTION

Regulation Sierra Club Dunnage Bags
Sleeping Bag Covers, etc.

Office, Loft and Factory
1252 Webster Street, Oakland, California

Everything that is Practical and Necessary for

YOUR OUTING TRIP

SPECIALTIES:

Fishing Tackle	Dunnage Bags
Mountain Boots and Shoes	Mosquito Head Nets
Sleeping Bags	Rubber Blankets
Air Mattresses	Folding Boats

Canvas and Leather Leggings

Khaki Suits to Order for Ladies and Gentlemen

Special Eiderdown Sleeping Bags

GOLCHER BROS.

(Formerly of Clabrough, Golcher & Co.)

511 Market Street, Telephone Temporary 1883 San Francisco

Goldberg, Bowen & Co.

FOUNDED 1850

We offer the choicest groceries from the world's best sources of supply, in their pristine purity, uniformity, and freshness.

Care, attention, and vigilance are exercised in the selection of all commodities, and therefore the best quality will be found in a large and varied stock.

We know just what you require for the camping-trip. Write us the number in the party and the length of the trip, and we will be pleased to figure on supplies that will last the entire trip. Canned and condensed soups, beef extracts, potted and deviled meats, and soothing beverages are most essential, and we have a varied assortment of these.

Ask for a copy of the Master Grocer.

GOLDBERG, BOWEN & CO.

GROCERS

IN SAN FRANCISCO:
1240 Van Ness Avenue
2229 California Street
1401 Haight Street
Warehouse: 965 Sutter Street

IN OAKLAND:
Thirteenth and Clay Streets
Warehouse: Sixteenth and Wood Streets

GRAND CANYON OF ARIZONA

REACHED ONLY VIA THE

Santa Fe

This world-wonder is in our own country, out in Arizona, a mile and a half above San Francisco, Chicago or New York.

To get there you take a CALIFORNIA LIMITED sleeper to the rim, and are entertained at a luxurious hotel, EL TOVAR, managed by Fred Harvey.

Write or ask any Santa Fe Agent for Grand Canyon, "Titan of Chasms" Booklet and California Limited Folder.

FRED W. PRINCE

City Ticket Agent

673 Market Street San Francisco

THE ROAD OF A THOUSAND WONDERS

THROUGH

California and Oregon

Wonderful Health and Pleasure Resorts on the Coast Line and Shasta Route of the Southern Pacific

DAYS OF HEALTH AND ENTERTAINMENT

Southern Pacific

Write for particulars to

CHAS. S. FEE, Pass. Traffic Mgr.

JAS. HORSBURGH, Jr., Gen. Pass. Agent

No. 1.–

Nos. 4
Kin

No. 8.–
Cha

No. 12.–

Nos. 2,
Bur

Content
Cal
Tuc
Riv
umr
Mt.
Wh
Rou
Caf
Val
Oct

Nos. 14
Bur

Content
Sou
Day
Lye
of
Kaw
and
of
On
Teh
War
Wo
spor

No. 20.–
Sier
Not

No. 21.–
out

No. 22.–
Yun
horn

No. 23.–
the
Trig
Des
Sier

No. 24.–
Butt
in t
and

No. 25.–
Cam
In T
Fro
Cou

No. 26.–
Kin
Hig

PUBLICATIONS OF THE SIERRA CLUB

No. 1.—Articles of Association, By-Laws, and List of Members.

Nos. 4 and 5.—Maps of Portions of the Sierra Nevada adjacent to the Yosemite and to King's River, 1893.

No. 8.—Table of Elevations within the Pacific Coast, 1895, by Mark B. Kerr and R. H. Chapman.

No. 12.—Map of the Sierra Region, May, 1896.

Nos. 2, 3, 6, 7, 9, 10, 11, 13, together forming Volume I., Nos. 1-8, of the SIERRA CLUB BULLETIN.

Contents of Volume I.—Ascent of Mt. Le Conte; Address on Sierra Forest Reservation; California Outing; Crater Lake, Oregon; Diamond Hitch; Explorations North of Tuolumne River; Forest Reservations; From Fresno to Mt. Whitney, via Roaring River; From Gentry's to El Capitan and Yosemite Falls; Grand Cañon of the Tuolumne; Head-Waters of King's River; Kern and King's River Divide; King's River and Mt. Whitney Trails; Knapsack Tours in the Sierra; Mt. Bernard; Mt. Tahoma; Mt. Whitney Trail; New Grove of Sequoia Gigantea; Notes on the Pine Ridge Trail; Route up Mt. Williamson; Search for a Route from the Yosemite to the King's River Cañon; Sources of the San Joaquin; Three Days with Mt. King; Through Death Valley; Through the Tuolumne Cañon; Tramp to Mt. Lyell; Upper Sacramento in October; Notes, Correspondence, and Reports.

Nos. 14, 15, 16, 17, 18, and 19, together forming Volume II., Nos. 1-6, of the SIERRA CLUB BULLETIN.

Contents of Volume II.—Ascent of the White Mountains of New Mexico; Basin of the South Fork of the San Joaquin River; Conifers of the Pacific Slope, Parts I and II; Day with Mt. Tacoma; Early Summer Excursion to the Tuolumne Cañon and Mt. Lyell; Expedition of Prince Luigi Amedeo of Savoy to Mt. St. Elias; Explorations of the East Creek Amphitheater, from Mt. Rose to Mt. Shasta and Lower Buttes; Kaweah Group; Lava Region of Northern California; Mountain Trips: What to Take and How to Take It; Neglected Region of the Sierra; Observations on the Denudation of Vegetation—Suggested Remedy for California; On Mt. Lefroy August 3, 1896; On Mt. Lefroy August 3, 1897; Philip Stanley Abbot; Taking of Mt. Balfour; To Tehipite Valley from the King's River Grand Cañon; Up and Down Bubb's Creek; Wanderings in the High Sierra Between Mt. King and Mt. Williamson.—Parts I and II; Woman's Trip Through the Tuolumne Cañon; Yosemite Discovery; Notes, Correspondence, and Reports.

No. 20.—Volume III., No. 1, pp. 1 to 118—price $1.00.—Ramblings Through the High Sierra (Reprinted from "A Journal of Ramblings," privately printed in 1875); Editorial Notice; Ouzel Basin; Forestry Notes.

No. 21.—Ramblings Through the High Sierra. Same as No. 20. (Specially bound; without Editorial Notes, etc.)

No. 22.—Volume III., No. 2, pp. 119 to 188.—Lake Tahoe in Winter; Ascent of "El Yunque"; Another Paradise; King's River Cañon Trail Notes; Ascent of "Matterhorn Peak"; Reports; Notes and Correspondence; Forestry Notes.

No. 23.—Volume III., No. 3, pp. 189 to 270.—Parks and Peaks in Colorado; The Work of the Division of Forestry in the Redwoods; The Mazamas on Mt. Jefferson; Wagon-Trips to the Sierra; The Big Basin; The Re-Afforesting of the Sierra Nevada; The Descent of Tenaya Cañon; An Ascent of Cathedral Peak; A Glimpse of the Winter Sierra; Notes and Correspondence; Forestry Notes.

No. 24.—Volume III., No. 4, pp. 271 to 339.—The Mazamas on Mt. Rainier; Lassen Buttes: From Prattville to Fall River Mills; Zonal Distribution of Trees and Shrubs in the Southern Sierra; Mt. Washington in Winter; Round About Mt. Dana; Notes and Correspondence; Forestry Notes; Reports.

No. 25.—Volume IV., No. 1, pp. 1 to 75.—Joseph Le Conte in the Sierra; El Capitan; Camp Muir in Tuolumne Meadows; The Sierra Club Outing to Tuolumne Meadows; In Tuolumne and Cathedral Cañons; The Great Spruce Forest and the Hermit Thrush; From Redding to the Snow-clad Peaks of Trinity County; Trees and Shrubs in Trinity County; Notes and Correspondence; Forestry Notes; Reports.

No. 26.—Vol. IV., No. 2, pp. 77 to 176.—Into the Heart of Cataract Cañon; My Trip to King's River Cañon (Reprint); Conifers of the Pacific Slope, Part III; Birds of the High Mountains; Notes and Correspondence; Forestry Notes; Reports.

PUBLICATIONS OF THE SIERRA CLUB—*Continued.*

No. 27.—A Flora of the South Fork of King's River from Millwood to the Head-Waters of Bubb's Creek.

No. 28.—Vol. IV., No. 3, pp. 177 to 252.—Among the Sources of the South Fork of King's River, Part I; With the Sierra Club in King's River Cañon; Red-and-White Peak and the Head-Waters of Fish Creek; Mt. Whitney, Whitney Creek, and the Poison Meadow Trail; A New-Year Outing in the Sierra; The Ascent of Volcano Mayon; Notes and Correspondence; Forestry Notes; Reports.

No. 29.—Vol. IV., No. 4, pp. 253 to 323.—Among the Sources of the South Fork of King's River, Part II; the Coast Sierra from California to Panama; Ralph Sidney Smith (In Memoriam); Climbing Mt. Brewer; Table of Elevations of Peaks in the Sierra Nevada Mountains over 12,000 feet; King's River Outing, 1902—Botanical Notes, etc.; Near the Kern's Grand Cañon; Reports; Notes and Correspondence; Forestry Notes.

No. 30.—Vol. V., No. 1, pp. 1 to 85.—The Ascent of the North Palisades; Variations of Sierra Glaciers; How Private Burns Climbed Mt. Pinatúbo; The Hillside Farmer and the Forest; The Notable Mountaineering of the Sierra Club in 1903; On the Trail with the Sierra Club; The Completed Le Conte Memorial Lodge; Reports; Notes and Correspondence; Forestry Notes.

No. 31.—Vol. V., No. 2, pp. 87 to 152.—Mt. Whitney as a Site for a Meteorological Observatory; The Water-Ouzel at Home; The San Francisco Peaks in April; Over Harrison's Pass with Animals; The Ascent of San Antonio; Secretary's Report; Treasurer's Report; Notes and Correspondence; Forestry Notes.

No. 32.—Vol. V., No. 3, pp. 153 to 270.—First Ascent: Mt. Humphreys; Address at Memorial Exercises; Mt. Lyell and Mt. Ritter Ascents by Sierra Club Outing of 1904; A Deer's Bill of Fare; Domes and Dome Structure of the High Sierra; Some Aspects of a Sierra Club Outing; The Evolution Groups of Peaks; Reports; Notes and Correspondence; Book Reviews; Forestry Notes.

No. 33.—Vol. V., No. 4, pp. 271 to 328.—The Grade Profile in Alpine Glacial Erosion; Systematic Asymmetry of Crest-Lines in the High Sierra of California; The Tuolumne Cañon; Inscription for the Le Conte Memorial; Over Harrison's Pass from the North with a Pack-Train; California Forestry Law; Reports; Notes and Correspondence; Book Reviews; Forestry Notes.

No. 34.—Vol. VI., No. 1, pp. 1 to 74.—The Sierra Club's Ascent of Mt. Rainier; Mt. Rainier, Mt. Shasta, and Mt. Whitney as Sites for Meteorological Observatories; The Sky-Line of the Tatoosh Range, Mt. Rainier National Park; The Effect of the Partial Suppression of Annual Forest Fires in the Sierra Nevada Mountains; In Memoriam; Joseph Le Conte; Wild Animals of Mt. Rainier National Park; The Sierran Puffball; Reports; Notes and Correspondence; Book Reviews; Forestry Notes.

All of above are out of print, having been destroyed in the fire of April 18, 1906.

No. 35.—Vol. VI., No. 2, pp. 75 to 152.—An Ascent of the Matterhorn; The Name "Mt. Rainier"; The Second King's River Outing; The Motion of the Nisqually Glacier, Mt. Rainier; Report on the King's River Cañon and Vicinity; Reports; Notes and Correspondence; Book Reviews; Forestry Notes; Revised By-Laws of the Sierra Club.

No. 36.—Vol. VI., No. 3, pp. 153 to 210.—The Aftermath of a Club Outing; Along the Foothills to Lake Chabot; Mt. Rose Weather Observatory; The Ascent of Asama-Yama; Reports; Secretary's Report; Treasurer's Report; Notes and Correspondence; Book Reviews; Forestry Notes.